MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

Permitting and Compliance Division
Water Protection Bureau
P.O. Box 200901, Helena, MT 59620-0901

Permit Fact Sheet
Montana Pollutant Discharge Elimination System (MPDES)

Permittee:	Montanore Minerals Corporation
Permit Number:	MT0030279
Receiving Waters:	Libby Creek and alluvial ground water Ramsey Creek Poorman Creek
Facility Name:	Montanore Project
Facility Location:	Section 15, Township 27 North, Range 31 West, Lincoln County
Facility Address:	Upper Libby Creek Drainage Libby, MT 59923
Facility Contacts:	Glenn M. Dobbs, Chief Executive Officer Montanore Minerals Corporation 34524 US Highway 2 Libby, MT 59923 Eric Klepfer Klepfer Mining Services LLC 13058 Sherwood Court Hayden Lake, ID 83835
Facility Type:	Privately-Owned Treatment Works
Major/Minor:	Minor
Number of Outfalls:	Three – Mine Drainage, Outfalls 001 – 003 Five – Integrated Storm Water, Outfalls 004 – 008

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1 BACKGROUND

This fact sheet identifies the principal facts, and significant factual, legal, methodological, and policy issues considered in preparing a draft permit in accordance with Administrative Rules of Montana (ARM) 17.30.1371. A fact sheet is prepared for any draft permit that established new or amended effluent limitations or standards, schedules of compliance, variances, nonsignificance determinations under ARM 17.30.706, denial or granting of mixing zones under ARM 17.30.515, or other significant requirements.

Montanore Minerals Corporation (hereinafter permittee) is the owner and operator of the Montanore Project (hereinafter facility), a silver ore and copper ore mining operation.

For the purposes of this fact sheet and associated draft permit, references to the "discharger" or "permittee" in applicable federal and state laws, regulations, policy, plans, or implementation procedures are held to be equivalent to references to the permittee in the permit and fact sheet.

1.1 Permit and Application Information

The permittee is currently regulated by MPDES permit number MT0030279. This permit became effective on April 1, 2006, and expired on March 31, 2011. The permit was modified on May 23, 2008, to reflect a permittee name change from Noranda Minerals Corporation to Montanore Minerals Corporation.

The permittee submitted a renewal application on August 23, 2010. Supplemental information was requested on November 12, 2010, and was received on January 18, 2011. The application was deemed complete on February 23, 2011. The current renewal application requests the continuance of the three (3) originally permitted outfalls and the addition of five (5) new storm water only outfalls. In accordance with ARM 17.30.1313, the terms and conditions of the 2006-issued permit have been administratively continued and remain in effect until a new permit is issued.

1.2 Description of the Facility and Discharge Points

This section describes the facility and discharge points (outfalls) as provided by the permittee in their permit application. As defined in ARM 17.30.1304, a facility or activity is any point source, including land appurtenances thereto, that are subject to regulation under the MPDES regulations. For the purposes of this permit, an outfall designates the location at which the facility or activity is authorized to discharge pollutants to state waters.

1.2.1 Description and Location of Facility

The Montanore Project is a proposed copper and silver underground mine located about 18 miles south of Libby near the Cabinet Mountains of northwestern Montana. The facility is located on patented mining claims within and adjacent to the Cabinet Mountains Wilderness. The targeted mineralized resource is underneath the Cabinet Mountains Wilderness; access is via an adit under the Cabinet Mountains Wilderness with a portal(s) on private land bordering the wilderness area. The permittee also has unpatented mining, mill site, and tunnel claims on National Forest System lands that cover the proposed mine development.

The mineralized resource, a stratabound copper-silver deposit, associated with the Montanore Project is about 135 million tons. The permittee anticipates mining up to 120 million tons over the estimated 16 year lifespan of the mine. The Montanore Project would consist initially of a 12,500-tons-per-day underground mining operation that would expand to a 20,000-tons-per-day at full production. Mining would use conventional room-and-pillar methods.

The mined ore would be crushed underground and conveyed to the surface for milling at the proposed Libby Plant Site between Libby Creek and Ramsey Creek. This mill facility would use a froth flotation process to produce a concentrate from the crushed ore. Collector and frother reagents added during the flotation process would separate the copper and silver minerals (sulfides) from the host rock and produce a copper-silver concentrate. The tailings (non-mineralized host rock) would consist mainly of quartzite and would sink to the bottom of the flotation cells. The flotation process would continue through cleaner flotation cells; this process would be repeated several times to improve mineral recovery and concentrate quality.

After the froth flotation process, the concentrate would be sent to a dewatering system where a polyacrylamide flocculant would be used to assist the dewatering of the concentrate and the fine fraction of the final tailings in their respective thickeners. After dewatering, the concentrate would be stored in a covered building prior to loading and transport to the loadout facility for subsequent shipment to the smelter. At peak production, an estimated 420 tons of concentrate (21 trucks per day) would be transported daily to a loadout facility in the Kootenai Business Park. The tailings produced during the milling and dewatering processes would be transported via a pipeline to the proposed Poorman Tailings Impoundment Site north of Poorman Creek for storage.

The permittee is currently regulated by Department of Environmental Quality's (DEQ) Environmental Management Bureau (EMB) under Operating Permit #00150; this permit is currently under revision.

The permittee is authorized to discharge from the following discharge structures (outfalls) that are regulated under MPDES permit number MT0030279:

- Outfall 001 – percolation pond discharging into ground water;
- Outfall 002 – drainfield with three infiltration zones discharging into ground water; and
- Outfall 003 – end-of-pipe direct discharge from the percolation pond into Libby Creek.

Outfalls 001 and 002 are permitted as surface water discharges that incorporate a ground water mixing zone. The percolation pond (Outfall 001) has an estimated capacity of 25 acre-feet. The drainfields (Outfall 002) are designed to accommodate discharge flows in excess of 200 gallons per minute (gpm). If the pond reaches full capacity then an overflow pipe (Outfall 003) routes water directly into Libby Creek. The permittee has not reported a discharge from Outfalls 002 and 003 during the term of the 2006-issued permit.

The permittee is proposing the addition of the following new storm water only outfalls within this permit renewal:

- Outfall 004 – runoff from the 5 acre Upper Libby Adit Pad area discharging into Libby Creek;
- Outfall 005 – runoff from the 3.8 acre road segment between the Libby Adit Pad and the Libby Plant Site discharging into Libby Creek;
- Outfall 006 – runoff from the 6.2 acre road segment north of the Libby Plant Site discharging into Ramsey Creek; and
- Outfalls 007 – runoff from the 2.8 acre road segment south of the Poorman Tailings Impoundment Site discharging into Poorman Creek; and
- Outfalls 008 – runoff from the 2.9 acre road segment south of the Poorman Tailings Impoundment Site discharging into Poorman Creek.

Precipitation and runoff from the Libby Adit Pad area is collected and directed into Outfall 001. The drainage area for Outfall 005 is separate from and does not include the drainage area for Outfall 001.

Based on the information provided by the permittee in Form 2C Part II.B, the source(s) of wastewater contributing to each outfall and their corresponding average flows, in gallons per minute (gpm), are summarized in Table 1. The average flow presented for Outfalls 001, 002, and 003 represents the sum of the adit water (360 gpm) and the runoff for the Libby Adit Pad (5 gpm). Based on the information provided by the permittee in Form 2F Part IV and supplemental application information, the volume of storm water contributing to each outfall, in cubic feet per second (cfs), are also summarized in Table 1. The storm water controls are designed based on a 10-year, 24-hour storm event.

Table 1. Sources of Wastewater Contributing to Each Outfall

Outfall	Description	Average Flow	Intermittent (Y/N)
001	Discharge of ground water from adits and underground mine workings, water from tailings impoundments, runoff from mine-related facilities	365 gpm	No
002	Discharge of ground water from adits and underground mine workings, water from tailings impoundments, runoff from mine-related facilities	365 gpm	Yes
003	Discharge of ground water from adits and underground mine workings, water from tailings impoundments, runoff from mine-related facilities	365 gpm	Yes
004	Storm water runoff from the Upper Libby Adit Pad area	3.20 cfs	Yes
005	Storm water runoff from mine access roads	3.58 cfs	Yes
006	Storm water runoff from mine access roads	5.41 cfs	Yes
007	Storm water runoff from mine access roads	2.74 cfs	Yes
008	Storm water runoff from mine access roads	2.80 cfs	Yes

1.2.2 Wastewater Treatment or Controls

The wastewater treatment processes for each outfall are summarized below in Table 2.

Table 2. Treatment Process for Each Outfall		
Outfall	**Source**	**Treatment Process**
001	Ground water from mine adits and underground mine workings	Underground Sediment Removal, Pressure Sand Filtration, Ultra/Membrane Filtration
	Storm water runoff from Libby Adit Pad area	Ditches and Sediment Traps at Libby Adit Pad area
002	Ground water from mine adits and underground mine workings	Underground Sediment Removal, Pressure Sand Filtration, Ultra/Membrane Filtration
003	Ground water from mine adits and underground mine workings	Underground Sediment Removal, Pressure Sand Filtration, Ultra/Membrane Filtration
004	Storm water runoff	Ditches and Sediment Traps around Upper Libby Adit Pad area
005	Storm water runoff	Ditches and Sediment Traps along mine access road
006	Storm water runoff	Ditches and Sediment Traps along mine access road
007	Storm water runoff	Ditches and Sediment Traps along mine access road
008	Storm water runoff	Ditches and Sediment Traps along mine access road

1.2.3 Discharge Points

The permittee discharges or proposes to discharge wastewater from the outfalls described in Section 1.2.1 above to state waters at the locations identified in Table 3. These locations were identified in the permittee's MPDES permit application. By definition, state waters means any body of water, irrigation system or drainage system, either surface or underground. Ponds, lagoons, or other waste impoundments used solely for treating, impounding, or transporting wastes are not state waters. Discharge to state waters is prohibited unless expressly authorized in the facility's discharge permit. The beneficial use classifications and applicable water quality standards for the receiving water are defined in Section 2.2.2 of this fact sheet.

Table 3. Discharge Location and Receiving Water for Each Outfall				
Outfall	**Latitude**	**Longitude**	**Receiving Water**	**Receiving Water Classification**
001	48º06'08" N	115º34'18" W	Libby Creek via Alluvial Ground Water	B-1
002	48º06'10" N	115º34'27" W	Libby Creek via Alluvial Ground Water	B-1
003	48º06'08" N	115º34'18" W	Libby Creek	B-1
004	48º05'37" N	115º35'04" W	Libby Creek	B-1
005	48º06'37" N	115º33'22" W	Libby Creek	B-1
006	48º07'50" N	115º33'09" W	Ramsey Creek	B-1
007	48º08'39" N	115º33'09" W	Poorman Creek	B-1
008	48º08'52" N	115º32'49" W	Poorman Creek	B-1

1.2.4 Permit Fee Determination

The Montana Water Quality Act (WQA) requires that permit fees be assessed that are sufficient to cover the cost administering the permit program (75-5-516, MCA). Permit fees are based on the type of waste (sewage, process wastewater, storm water, noncontact cooling water, etc.) and receiving water. An application and annual fee for multiple outfalls is not required unless the discharges are to different receiving waters that result in multiple or variable effluent limits. Table 4 below identifies, individually or by group, the type of wastewater and receiving water by outfall for which effluent limits will be required.

Table 4. Summary of Outfall Categories for Fee Purposes

Group	Effluent Description	Receiving Water	Outfall(s)
A	Ground water from mine adits and underground mine workings	Libby Creek via Alluvial Ground Water	001, 002
B	Storm water runoff from Libby Adit Pad area	Libby Creek via Alluvial Ground Water	001
C	Ground water from mine adits and underground mine workings	Libby Creek	003
D	Storm water runoff	Libby Creek	004, 005
E	Storm water runoff	Ramsey Creek	006
F	Storm water runoff	Poorman Creek	007, 008

1.2.5 Effluent Characteristics

ARM 17.30.1371 requires that the fact sheet provide a description of the significant effluent characteristics of the wastes to be discharged. This information must be provided in the permit application as required by ARM 17.30.1322 and the code of federal regulations (CFR) at 40 CFR 122.21. This data must be collected over the previous 3-5 years and must reflect the current operation of the facility. For new discharges or if no discharge has occurred, the permittee must provide a reasonable estimate of the pollutant concentration and the method for estimation.

Effluent characteristics are given in Appendix 3 based on information provided by the permittee on Forms 2C and 2F. In addition to the requirements of ARM 17.30.1371, these effluent characteristics provide a basis for the water quality-based effluent limitations (WQBELs) developed in Section 2.2 of this fact sheet, and for new or increased sources, fulfill the requirements of ARM 17.30.706(3). Outfalls with substantially identical effluents may be combined for reporting purposes. Sample and analytical procedures employed for this analysis must be in accordance with methods given in 40 CFR 136. If no analytical method is approved in 40 CFR 136, the applicant may use any suitable method but must provide a description of the method employed.

Compliance monitoring and effluent limitations contained in the current permit are summarized in Section 1.3 of this fact sheet. In addition to chemical specific characteristics, existing dischargers may be may be required to submit WET data, also summarized in Section 1.3.

1.2.6 Planned Changes – Not Applicable

1.2.7 Other Information

This section includes any additional information that is relevant to development of the permit and is matter of record based on the permit application and supplement material, including:

ENVIRONMENTAL IMPACT STATEMENT

The U.S. Department of Agriculture, Kootenai National Forest (KNF) and DEQ are the lead agencies for the Montanore Project Environmental Impact Statement (EIS) and have prepared an EIS in compliance with the National Environmental Policy Act (NEPA) and the Montana Environmental Policy Act (MEPA). The EIS serves as a report required by the Major Facility Siting Act (75-20-216, MCA). The lead agencies (KNF and DEQ) are responsible for the analysis of the Montanore Project. The cooperating agencies are the Bonneville Power Administration, the U.S. Army Corps

of Engineers (USACE), and Lincoln County, Montana. A single EIS for the Montanore Project is being prepared to provide a coordinated and comprehensive analysis of potential environmental impacts. KNF and USACE will use the analysis to determine whether to issue the approvals necessary for the construction and operation of the Montanore Project. Other permits, licenses, and/or approvals from the two lead agencies and from other agencies are also required.

OPERATING PERMIT

This MPDES permit authorizes the permittee to discharge to within the operational boundary as part of their operations approved under Operating Permit #00150 issued by DEQ's Environmental Management Bureau (EMB). The facility size and treatment system evaluated in this MPDES permit application is based on the exploration phase proposed by the permittee; any changes to the operating permit altering the basis for the effluent limits or otherwise resulting in any relevant changes to the MPDES permit would require the permittee to seek a modification of this MPDES permit from DEQ. Additionally, if there are any additional conditions or requirements identified in the Final EIS and Record of Decision (ROD) relevant to the MPDES permit then a modification of this MPDES permit may be required.

DISCHARGES TO SURFACE WATER VIA GROUND WATER

The discharge of pollutants to ground water within the operational boundary of the facility is regulated by DEQ's EMB via Operating Permit #00150 (see 75-5-401(5), MCA). This permit is currently undergoing revision by EMB. The discharge of pollutants to surface water via hydrologically connected ground water (e.g. the facility's discharges from Outfalls 001 and 002) is regulated by DEQ's Water Protection Bureau via the MPDES permitting program (see 75-5-401(7), MCA).

MIXING ZONES

The 2006-issued MPDES permit for the facility authorized mixing zones for Outfalls 001, 002, and 003 as described below:

- Outfalls 001 and 002 – The maximum extent of the chronic mixing zone of ground water discharged to Libby Creek receiving waters shall extend downgradient to monitoring station LB-300 for the following parameters: 1) Total inorganic nitrogen, 2) Chromium, 3) Copper, 4) Iron, 5) Manganese, and 6) Zinc.
- Outfall 003 – The maximum extent of the chronic mixing zone in Libby Creek extends downgradient from the discharge point two stream widths for the following parameters: 1) Total inorganic nitrogen, 2) Chromium, 3) Copper, 4) Iron, 5) Manganese, and 6) Zinc.

AUTHORIZATION TO DEGRADE

The permitting process for the Montanore Project began in 1989. In December of that year, Noranda Minerals Corporation (NMC) submitted a "Petition for Change in Quality of Ambient Waters" (Petition) to the Board of Health and Environmental Sciences (BHES) requesting an increase in the concentration of select parameters in surface water and ground water above ambient water quality as required by Montana's 1971 nondegradation statute. In November of 1992, the BHES issued order BHES 93-001-WQB (Order) in response to NMC's Petition.

The Order authorized degradation and established limits in surface water and ground water in the Libby, Poorman and Ramsey Creek watersheds adjacent to the Montanore Project for discharges from the facility. The Order established numeric limits for chromium, copper, iron, manganese, zinc, nitrate + nitrite, total ammonia, and total dissolved solids. The nitrogen species were also addressed as total inorganic nitrogen. The Order limits for surface water and ground water are summarized below in Table 5. Pursuant to the Order, these limits remain in effect during the operational life of the mine and for so long thereafter as necessary.

Table 5. BHES Order Limits

Parameter	Units	Surface Water Limitation	Ground Water Limitation
Total Dissolved Solids	mg/L	100	200
Chromium, Total Recoverable	mg/L	0.005	0.02
Copper, Total Recoverable	mg/L	0.003	0.1
Iron, Total Recoverable	mg/L	0.1	0.2
Manganese, Total Recoverable	mg/L	0.05	0.05
Zinc, Total Recoverable	mg/L	0.025	0.1
Nitrate + Nitrite, as N	mg/L	1.0	10
Total Inorganic Nitrogen	mg/L	1.0	10
Total Ammonia	mg/L	1.5	NA

A consent decree was signed between the Montana Department of Health and Environmental Sciences and NMC on May 12, 1993, that adopted the BHES Order establishing limits for inorganic nitrogen at the Libby Creek Station LB-300 of 1.0 mg/L. Further control of the discharge was addressed by an agreement that NMC would apply for a MPDES permit. The facility was initially permitted in 1997 when DEQ issued a MPDES permit to NMC (MT-0030279) to allow discharges of water flowing from the Libby Adit to Libby Creek. Three discharge locations were authorized in the permit: Outfall 001 – percolation pond; Outfall 002 – infiltration system of buried pipes; and Outfall 003 – pipeline outlet to Libby Creek. Surface discharge from the adit ceased in 1998 and water in the adit flowed to the underlying ground water.

In 2006, NMC's name was changed to Montanore Minerals Corporation (MMC; permittee) as part of the renewal process for the 2006-issued MPDES permit. Surface discharge from the adit resumed in 2007; MMC is currently maintaining groundwater levels in the Libby Adit at 7,200 feet from the adit portal. Water from the adit is pumped to the surface, treated at the Water Treatment Plant, and then discharged via Outfall 001. Further exploration and operations are on hold pending the completion of the EIS process with the issuance of the ROD.

BIOLOGICAL MONITORING

The permittee has conducted biological monitoring of the receiving waters and provided DEQ with the results on an annual basis as required under EMB's Operating Permit #00150. The aquatic monitoring required includes the following:

- Physical and Chemical Water Characteristics;
- Habitat Types;
- Substrate;
- Macroinvertebrates;
- Periphyton;
- Salmonid Abundance; and
- Fish Tissue.

1.3 Compliance Summary

Effluent limits and monitoring requirements from the 2006-issued permit with a period of record (POR) from January 1, 2008, through September 30, 2014, for the discharges from Outfalls 001, 002, and 003 are summarized in Tables 6, 7, and 8 below. The permittee did not report any discharges from Outfalls 002 and 003 during the POR; the effluent data reported by the permittee is from Outfall 001 only.

Table 6. Summary of the 2006-issued Permit Limitations and Monitoring Data – Outfall 001

Parameter	Units	Effluent Limitations			Monitoring Data (1/1/2008 through 9/30/2014)		
		Average Monthly	Maximum Daily	Annual Average Load	Maximum Average Monthly Discharge	Maximum Daily Discharge	Maximum Annual Average Load
Flow	gpm	-	-	-	-	374	-
pH, maximum	s.u.	-	8.5	-	-	8.49	-
pH, minimum	s.u.	-	6.5	-	-	6.70	-
Oil & Grease	mg/L	-	10	-	-	-	-
Ammonia, Total (as N)	mg/L	-	-	-	0.190	0.557	-
	lbs/day	-	-	-	-	-	-
Nitrite-Nitrate (as N)	mg/L	-	-	-	0.441	1.940	-
	lbs/day	-	-	-	-	-	-
Total Inorganic Nitrogen (as N)	mg/L	2.5	-	-	-	-	-
	lbs/day	-	-	15.0	-	-	0.41
Cadmium, Total Recoverable	mg/L	0.0008	0.0012	-	0.000055	0.0001	-
	lbs/day	-	-	0.005	-	0.0001	0.0000360
Chromium, Total Recoverable	mg/L	0.013	0.020	-	0.0040	0.0052	-
	lbs/day	-	-	0.078	-	0.0126	0.0070
Copper, Total Recoverable	mg/L	0.007	0.010	-	0.0040	0.0040	-
	lbs/day	-	-	0.042	-	0.0060	0.0050
Iron, Total Recoverable	mg/L	0.25	0.38	-	0.260	0.590	-
	lbs/day	-	-	1.50	-	0.757	0.240
Lead, Total Recoverable	mg/L	0.0006	0.0009	-	0.0002	0.0006	-
	lbs/day	-	-	0.004	-	0.0004	0.0001
Manganese, Total Recoverable	mg/L	0.11	0.15	-	0.0220	0.0640	-
	lbs/day	-	-	0.66	-	0.0953	0.1800
Mercury, Total Recoverable	mg/L	0.00001	0.000015	-	0.0002	0.0002	-
	lbs/day	-	-	0.00006	-	0.0000016	0.000001
Zinc, Total Recoverable	mg/L	0.10	0.15	-	0.0240	0.0370	-
	lbs/day	-	-	0.66	-	0.0860	0.0700
Sulfate	mg/L	-	-	-	123	943	-
	lbs/day	-	-	-	-	-	-

Table 7. Summary of the 2006-issued Permit Limitations and Monitoring Data – Outfall 002

Parameter	Units	Effluent Limitations			Monitoring Data (1/1/2008 through 9/30/2014)		
		Average Monthly	Maximum Daily	Annual Average Load	Maximum Average Monthly Discharge	Maximum Daily Discharge	Maximum Annual Average Load
Flow	gpm	-	-	-	-	-	-
pH, maximum	s.u.	-	8.5	-	-	-	-
pH, minimum	s.u.	-	6.5	-	-	-	-
Oil & Grease	mg/L	-	10	-	-	-	-
Ammonia, Total (as N)	mg/L	-	-	-	-	-	-
	lbs/day	-	-	-	-	-	-
Nitrite-Nitrate (as N)	mg/L	-	-	-	-	-	-
	lbs/day	-	-	-	-	-	-
Total Inorganic Nitrogen (as N)	mg/L	2.5	-	-	-	-	-
	lbs/day	-	-	15.0	-	-	-
Cadmium, Total Recoverable	mg/L	0.0008	0.0012	-	-	-	-
	lbs/day	-	-	0.005	-	-	-
Chromium, Total Recoverable	mg/L	0.013	0.020	-	-	-	-
	lbs/day	-	-	0.078	-	-	-
Copper, Total Recoverable	mg/L	0.007	0.010	-	-	-	-
	lbs/day	-	-	0.042	-	-	-
Iron, Total Recoverable	mg/L	0.25	0.38	-	-	-	-
	lbs/day	-	-	1.50	-	-	-
Lead, Total Recoverable	mg/L	0.0006	0.0009	-	-	-	-
	lbs/day	-	-	0.004	-	-	-
Manganese, Total Recoverable	mg/L	0.11	0.15	-	-	-	-
	lbs/day	-	-	0.66	-	-	-
Mercury, Total Recoverable	mg/L	0.00001	0.000015	-	-	-	-
	lbs/day	-	-	0.00006	-	-	-
Zinc, Total Recoverable	mg/L	0.10	0.15	-	-	-	-
	lbs/day	-	-	0.66	-	-	-
Sulfate	mg/L	-	-	-	-	-	-
	lbs/day	-	-	-	-	-	-

Table 8. Summary of the 2006-issued Permit Limitations and Monitoring Data – Outfall 003

Parameter	Units	Effluent Limitations			Monitoring Data (1/1/2008 through 9/30/2014)		
		Average Monthly	Maximum Daily	Annual Average Load	Maximum Average Monthly Discharge	Maximum Daily Discharge	Maximum Annual Average Load
Flow	gpm	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L	20	30	-	-	-	-
	lbs/day	-	-	-	-	-	-
pH, maximum	s.u.	-	8.5	-	-	-	-
pH, minimum	s.u.	-	6.5	-	-	-	-
Temperature	°F	-	-	-	-	-	-
Oil & Grease	mg/L	-	10	-	-	-	-
Ammonia, Total (as N)	mg/L	-	-	-	-	-	-
	lbs/day	-	-	-	-	-	-
Nitrite-Nitrate (as N)	mg/L	-	-	-	-	-	-
	lbs/day	-	-	-	-	-	-
Total Inorganic Nitrogen (as N)	mg/L	2.2	-	-	-	-	-
	lbs/day	-	-	13.2	-	-	-
Cadmium, Total Recoverable	mg/L	0.0007	0.0010	-	-	-	-
	lbs/day	-	-	0.0042	-	-	-
Chromium, Total Recoverable	mg/L	0.011	0.016	-	-	-	-
	lbs/day	-	-	0.066	-	-	-
Copper, Total Recoverable	mg/L	0.006	0.009	-	-	-	-
	lbs/day	-	-	0.036	-	-	-
Iron, Total Recoverable	mg/L	0.22	0.33	-	-	-	-
	lbs/day	-	-	1.32	-	-	-
Lead, Total Recoverable	mg/L	0.0006	0.0009	-	-	-	-
	lbs/day	-	-	0.004	-	-	-
Manganese, Total Recoverable	mg/L	0.09	0.14	-	-	-	-
	lbs/day	-	-	0.54	-	-	-
Mercury, Total Recoverable	mg/L	0.00001	0.000015	-	-	-	-
	lbs/day	-	-	0.00006	-	-	-
Zinc, Total Recoverable	mg/L	0.057	0.086	-	-	-	-
	lbs/day	-	-	0.342	-	-	-
Sulfate	mg/L	-	-	-	-	-	-
	lbs/day	-	-	-	-	-	-

WHOLE EFFLUENT TOXICITY

The 2006-issued permit for the facility included the narrative effluent limitation of "There shall be no acute toxicity in the effluent discharged by the facility" applicable to the discharges from Outfalls 001, 002, and 003. Whole Effluent Toxicity (WET) monitoring and reporting was not required in

the 2006-issued permit. WET limitations for this permit issuance are evaluated below in Sections 2.2.8 and 2.2.10.

1.3.1 Compliance History

Data and information submitted to or collected by DEQ indicate that the permittee has exceeded existing effluent limitations or failed to comply with other existing permit requirements as outlined in Table 9.

Table 9. Summary of Violations

Date	Monitoring Period	Violation Type	Parameter	Units	Reported Value	Effluent Limitation
9/30/2008	3rd Quarter, 2008	Average Monthly	Iron, dissolved (as Fe)	mg/L	0.26	0.25
9/30/2008	3rd Quarter, 2008	Maximum Daily	Iron, dissolved (as Fe)	mg/L	0.59	0.38

1.3.2 Inspection Results

DEQ performed a compliance evaluation inspection of the facility on February 9, 2011; no violations were documented.

2 RATIONALE FOR EFLUENT LIMITATIONS

The WQA requires that DEQ clearly specify in the permit any limitations imposed on the volume, strength, and other significant characteristics of the waste to be discharged. The control of pollutants discharged is established through effluent limitations and other requirements in the permit. There are two principal bases for effluent limitations: technology-based effluent limitations that specify the minimum level of treatment or control for conventional, non-conventional, and toxic pollutants and water quality-based effluent limitations that attain and maintain applicable numeric and narrative water quality standards.

2.1 Technology-based Effluent Limitations (TBELs)

The Clean Water Act (CWA) Section 402(a)(1) (33 U.S.C. 1342(a)(1)) and the federal regulations at 40 CFR 125.3(a) require that permits issued under Section 402, including those issued by state programs, contain TBELs that implement the technology-based treatment requirements specified in the CWA. These technology-based requirements may be national technology standards for existing sources or new sources established by the United States Environmental Protection Agency (EPA) pursuant to Section 304 of the CWA, or, in some cases, standards established by the permit writer on a case-by-case basis.

2.1.1 Scope and Authority

EPA promulgates effluent guidelines under the authority of Sections 301, 304, 306, 307, 308, 402, and 501 of the CWA (33 U.S.C. 1311, 1314, 1316, 1318, 1342, and 1361). The Board of Environmental Review (Board) pursuant to 75-5-304(1), MCA, has adopted effluent limitations and standards and new source performance standards in Title 17, Chapter 30, Subchapter 12 based on the applicable federal regulation. EPA has promulgated national technology-based standards of performance for both existing and new sources at 40 CFR Subchapter N for dischargers other than POTWs.

Effluent guidelines establish the following standards for direct discharges from facilities other than POTWs:

- Best practicable treatment control technology (BPT) represents the average of the best performance by plants within an industrial category or subcategory. BPT standards apply to toxic, conventional, and non-conventional pollutants discharged by an existing discharge or new discharge that is not a new source.
- Best available technology economically achievable (BAT) represents the best existing performance of treatment technologies that are economically achievable within an industrial point source category. BAT standards apply to toxic and non-conventional pollutants discharged by an existing discharge or new discharge that is not a new source.
- Best conventional pollutant control technology (BCT) represents the control of conventional pollutants including BOD, TSS, fecal coliform, pH, and oil and grease in an existing discharge or new discharge that is not a new source. The BCT standard is established after considering the "cost reasonableness" of the relationship between the cost of attaining a reduction in effluent discharge and the benefits that would result, and also the cost effectiveness of additional industrial treatment beyond BPT.

- New source performance standards (NSPS) represent the best available demonstrated control technology standards. The intent of NSPS guidelines is to set limitations that represent state-of-the-art treatment technology for new sources. A source is a new source if it meets the definition of new source in ARM 17.30.1304 and 1340(1) and a new source performance standard is independently applicable to it. If there is no such independently applicable standard, the source is a new discharger [ARM 17.30.1340(2)]. A source is an existing source if it is not a new source or a new discharger. For purposes of applying effluent guidelines, the existing sources standards (BPT, BAT, and BCT) apply to existing sources and new dischargers. NSPS apply to new sources.

Pursuant to Section 402(a)(2) of the CWA (33 U.S.C. 1342(a)(2)), where EPA has not established effluent guidelines that are applicable to a particular class or category of industrial discharger or to a specific discharge, the permit writer establishes applicable technology-based treatment requirements on a case-by-case basis using best professional judgment (BPJ). Regulations for establishing these case-by-case requirements using BPJ are given in 40 CFR 125.3 and ARM 17.30.1203.

Finally, ARM 17.30.1345(1) requires that permit limitations, standards and prohibitions must be established for each outfall or discharge point of the permitted facility, except that best management practices may be imposed under 40 CFR 122.44(k) to control or abate pollutions, including:

- As authorized under Section 304(e) of the CWA for the control of toxic pollutants or hazardous wastes;
- As authorized under Section 402(p) of the CWA for the control of storm water dischargers;
- When numeric effluent limitation are infeasible; or
- When the practices are reasonably necessary to achieve effluent limitation or standards or to carry out the purposes and intent of the CWA.

Compliance with any applicable TBELs must be measured prior to dilution with the receiving water.

2.1.2 Applicable Technology Standards

The technology standards applicable to the facility are described below.

EFFLUENT LIMITATION GUIDELINES

EPA has promulgated effluent limitation guidelines (ELGs) in 40 CFR Part 440, Subpart J for facilities in the Ore Mining and Dressing Point Source Category and the Copper, Lead, Zinc, Gold, Silver, and Molybdenum Ores Subcategory. These ELGs are found at 40 CFR 440.100 through 440.105. These guidelines address the following processes employed or other activities conducted at the facility:

- Mines that produce copper, lead, zinc, gold, silver, or molybdenum bearing ores, or any combination of these ores from open-pit or underground operations other than placer deposits.

In addition, the General Provisions and Definitions in 40 CFR 440 Subpart L, found at 40 CFR 440.130 through 132, are also applicable to the facility and are incorporated by reference into this fact sheet.

Applicable Effluent Limitation Guidelines, Outfalls 001-003

The new source date for the ELGs in the Ore Mining and Dressing Point Source Category is December 3, 1982. For the purposes of determining the applicable ELGs only and based on the information in the permit application, DEQ has determined that discharges from Outfalls 001-003 began after the new source date, meeting the ELG definition of a new source. Accordingly, NSPS are the applicable level of control required.

Processes and activities conducted at the facility contributing to the discharge(s) from Outfalls 001-003 that are addressed by the applicable ELGs are as follows:

- Mine drainage; and
- Storm water that comes in contact with waste rock

The applicable numeric ELGs in 40 CFR 440.104 are summarized in Table 10.

Table 10. 40 CFR 440.104(a) – Mine Drainage

Parameter	Performance Standard	Units	Daily Maximum Limitation	30-day Average Limitation
Total Suspended Solids (TSS)	NSPS	mg/L	30.0	20.0
Copper	NSPS	mg/L	0.30	0.15
Zinc	NSPS	mg/L	1.5	0.75
Lead	NSPS	mg/L	0.6	0.3
Mercury	NSPS	mg/L	0.002	0.001
Cadmium	NSPS	mg/L	0.10	0.05
pH	NSPS	s.u.	Between 6.0 and 9.0 at all times	

The effluent guidelines found at 40 CFR 40.104(b)(1) state that there shall be no discharge of process wastewater to navigable waters from mills that use the froth-flotation process alone, or in conjunction with other processes, for the beneficiation of copper, lead, zinc, gold, silver, or molybdenum ores or any combination of these ore

The effluent guidelines found at 40 CFR 440.104(b)(2)(i) state that in the event that the annual precipitation falling on the treatment facility and the drainage area contributing surface runoff to the treatment facility exceeds the annual evaporation, a volume of water equal to the difference between annual precipitation falling on the treatment facility and the drainage area contributing surface runoff to the treatment facility and annual evaporation may be discharged subject to the limitations summarized in Table 10 above.

The effluent guidelines found at 40 CFR 440.104(b)(2)(ii) state that in the event there is a buildup of contaminants in the recycle water which significantly interferes with the ore recovery process and this interference cannot be eliminated through appropriate treatment of the recycle water, the permitting authority may allow a discharge of process wastewater in an amount necessary to correct the interference problem after installation of appropriate treatment. This discharge shall be subject to the limitations summarized in Table 10 above. The facility shall have the burden of demonstrating to the permitting authority that the discharge is necessary to eliminate interference in the ore recovery

process and that the interference could not be eliminated through appropriate treatment of the recycle water.

The effluent guidelines found at 40 CFR 440.104(c)(1-2) are not applied to the facility since the facility does not use or propose to use dump, heap, in-situ leach, or vat-leach processes to extract copper from ores or ore waste materials.

The effluent guidelines found at 40 CFR 440.104(d)(1-2) are not applied to the facility since the facility does not use or propose to use the cyanidation process to extract gold or silver.

Applicable Effluent Limitation Guidelines, Outfall 004

The new source date for the ELGs in the Ore Mining and Dressing Point Source Category is December 3, 1982. For the purposes of determining the applicable ELGs only and based on the information in the permit application, DEQ has determined that discharges from Outfall 004 will begin after the new source date, meeting the ELG definition of a new source. Accordingly, NSPS are the applicable level of control required.

Outfall 004 is a storm water only outfall for runoff from the proposed Upper Libby Adit Pad. The Upper Libby Adit will begin construction from the existing Libby Adit and daylighting about 1 mile away. The Upper Libby adit will be constructed such that any waste rock produced and/or any mine drainage encountered during will be directed towards the existing Libby adit for removal and treatment. Discharges from Outfall 004 are not proposed to contain any process wastewater or mine drainage; there are not any numeric ELGs applicable to this type of discharge at Outfalls 005-008. The discharge of any process wastewater or any water resulting from mine dewatering activities at this outfall is prohibited.

Finally, given the proposed nature of discharge at Outfall 004 and the nature of storm water-driven discharge events, DEQ is establishing the use of Best Management Practices (BMPs) for the control of pollutants at Outfall 004 (40 CFR 122.44(k); ARM 17.30.1345); see Section 4.2 of this fact sheet. BMPs are defined as a permit condition and are used in conjunction with numeric effluent limits to prevent or control the discharge of pollutants to state waters.

Applicable Effluent Limitation Guidelines, Outfalls 005-008

The new source date for the ELGs in the Ore Mining and Dressing Point Source Category is December 3, 1982. For the purposes of determining the applicable ELGs only and based on the information in the permit application, DEQ has determined that discharges from Outfall 005-008 would begin after the new source date, meeting the ELG definition of a new source.

Outfalls 005-008 are storm water only outfalls for runoff from access roads and haul roads which are not part of the active mine area. Discharges from these outfalls are not expected to contain process wastewater or mine drainage; there are not any numeric ELGs applicable to this type of discharge at Outfalls 005-008. The discharge of any process wastewater or any water resulting from mine dewatering activities at Outfalls 005-008 is prohibited.

Finally, given the description of the proposed discharges at Outfalls 005-008 and the nature of storm water-driven discharge events, DEQ is establishing the use of BMPs for the control of pollutants at Outfalls 005-008 (40 CFR 122.44(k); ARM 17.30.1345); see Section 4.2 of this fact sheet. BMPs are defined as a permit condition and are used in conjunction with numeric effluent limits to prevent or control the discharge of pollutants to state waters.

2.1.3 TBEL Calculations

State and federal regulations include specific requirements for how TBELs for industrial facilities are calculated using the appropriate standards:

- ARM 17.30.1345(2) requires that any permit limitations, standards, or other prohibitions which are based on units of production (or other measure of operation) be based on a reasonable measure of actual production of the facility and not on the designed production capacity. The permit may include a condition establishing alternative permit limitation, standards, or prohibitions based upon anticipated increased or decreased production levels, however, these alternate limits may not exceed maximum production capacity. In calculating alternative permit limitation, the permit must satisfy the requirement of ARM 17.30.1345(4).
- All permit effluent limitations, standards or prohibitions for a metal must be expressed as *total recoverable metal* as defined in 40 CFR 136 unless: the applicable effluent standard or limitation has been expressed in another form; in establishing permit limits on a case-by-case basis under 40 CFR 125.3 (ARM 17.30.1203); or the approved method for the metal only measures the dissolved form (e.g. hexavalent chromium) (ARM 17.30.1345(5)).
- For continuous discharges, all permit effluent limitations, standards, and prohibitions must, unless impracticable, be stated as maximum daily and average monthly discharge limitations for all dischargers other than POTWs (ARM 17.30.1345(6)).
- Dischargers that are not continuous must be particularly described and limited, considering, as appropriate, frequency, total mass, maximum rate of discharge of pollutants during the discharge, and prohibition or limitations of specified pollutants by mass, concentration, or other appropriate measure (ARM 17.30.1345(7)).
- All pollutants limited in permits must have limitations, standards, or prohibitions expressed in terms of mass except for: pH, temperature, radiation, or other pollutants that cannot be appropriately expressed by mass; when applicable standards and limitations are expressed in terms of other units of measurement; or if in establishing limitations on a case-by-case basis, limitations expressed in terms of mass are infeasible because the mass of the pollutant discharged cannot be related to a measure of operation (ARM 17.30.1345(8)).

PRODUCTION DATA FOR APPLICATION OF EFFLUENT LIMITATION GUIDELINES

The effluent limitation guidelines applicable to the facility are not expressed in terms of mass or other production-based limitations. The effluent limitations will therefore be expressed in terms of concentration as given in 40 CFR 440 Subpart J.

2.1.4 Final TBELs

This section summarizes the TBELs applicable to the facility.

NUMERIC TBELS, OUTFALLS 001-003

Table 11 summarizes the numeric TBELs for the facility applicable to Outfalls 001-003.

Table 11. Technology-Based Effluent Limitations, Outfalls 001-003

Parameter	Units	Daily Maximum Limitation	30-day Average Limitation
Total Suspended Solids (TSS)	mg/L	30.0	20.0
Copper	mg/L	0.30	0.15
Zinc	mg/L	1.5	0.75
Lead	mg/L	0.6	0.3
Mercury	mg/L	0.002	0.001
Cadmium	mg/L	0.10	0.05
pH	s.u.	Between 6.0 and 9.0 at all times	

ALTERNATIVE TBELS FOR PRECIPITATION, OUTFALLS 001-003

If the permittee documents and demonstrates that a discharge occurs as a result of the conditions outlined in 40 CFR 440.104(b)(2)(i) and 40 CFR 440.131(c) then the discharge of a volume of water equal to the difference between annual precipitation falling on the treatment facility and the drainage area contributing surface runoff to the treatment facility and annual evaporation may be discharged subject to, at a minimum, the limitations summarized in Table 11 above.

ALTERNATIVE TBELS FOR INTERFERENCE, OUTFALLS 001-003

If the permittee documents and demonstrates the need for a discharge due to interference that meets all of the requirements under 40 CFR 440.104(b)(2)(ii) and 40 CFR 440.131(d) then a discharge of process wastewater in an amount necessary to correct the interference problem after installation of appropriate treatment may be discharged subject to, at a minimum, the effluent limitations as listed in Table 11 above.

NUMERIC TBELS, OUTFALL 004-008

There are no numeric TBELS applicable to the discharges from Outfalls 004-008.

ALTERNATIVE TBELS, OUTFALLS 004-008

There are not any alternative TBELs that are applicable to any discharges from Outfalls 004-008.

NARRATIVE TBELS, OUTFALLS 004-008

The discharge of any process wastewater or any water resulting from mine dewatering activities at Outfalls 004-008 is prohibited.

2.2 Water Quality-based Effluent Limitations (WQBELs)

Section 301(b) of the CWA and 40 CFR 122.44(d), incorporated into ARM 17.30.1344(2)(b) by reference, require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. ARM 17.30.635 requires that the degree of waste treatment required to restore and maintain the quality of state water shall be based on the surface water quality standards, and: 1) the state's policy of nondegradation of existing water quality in 75-5-303, MCA; 2) present and anticipated (designated) uses of the

receiving water; 3) the quality and nature of flow of the receiving water; 4) the quantity and quality of sewage, industrial or other wastes to be treated; and, 5) the presence or absence of other sources of pollution in the watershed.

2.2.1 Scope and Authority

The WQA at 75-5-401(2), MCA states that a permit may only be issued if DEQ finds that the issuance or continuance of the permit will not result in pollution of any state waters. The Montana water quality standards (general prohibitions) at ARM 17.30.637 require that no wastes may be discharged such that the waste either alone or in combination with other wastes will violate or may reasonably be expected to violate any standard. ARM 17.30.1344(1) adopts by reference 40 CFR 122.44 and states that MPDES permits shall include limits on all pollutants which will cause, or have a reasonable potential to cause an excursion of any water quality standard, including narrative standards.

The WQA, Title 75, Part 3 requires the Board to establish the classification of all state waters in accordance with their present and future most beneficial uses; to formulate and adopt standards of water quality, giving consideration to the economics of waste treatment and prevention; adopt rules implementing the state's nondegradation policy; and adopt rules governing mixing zones. The Montana Surface Water Quality Standards and Procedures are found in ARM 17.30.601 *et seq.*, which also includes, by reference, Department Circular DEQ-7 – Montana Numeric Water Quality Standards. Montana's regulations on Nondegradation of Water Quality are in ARM 17.30.701 *et seq.*, and regulations on Mixing Zones in Surface and Ground Water are in ARM 17.30.501 *et seq.*

ARM 17.30.603 states that the standards in this subchapter are adopted to establish the maximum allowable changes in surface water quality and to establish a basis for limiting the discharge of pollutants. ARM 17.30.620 states that the specific water quality standards along with the general provisions of ARM 17.30.635 through 637, ARM 17.30.645, and ARM 17.30.646 protect the beneficial uses set for the in the water-use classifications.

On July 25, 2014, the Board adopted new rules governing nutrients for surface waters, including Circulars DEQ-12A (Montana Base Numeric Nutrient Standards) and DEQ-12B (Nutrient Standard Variances). These standards and corresponding variance procedures apply to the parameters total nitrogen and total phosphorus.

2.2.2 Applicable Water Quality Standards

WQBELs are evaluated for all parameters of concern based on the water quality standards that are applicable to the receiving water at the point of discharge. The water use classification and water quality standards that apply to the receiving water body for each regulated outfall are summarized below.

Water Use Classification and Standards, Outfalls 001 and 002

Outfalls 001 and 002 discharge indirectly into Libby Creek via alluvial ground water. Libby Creek is located within the Upper Kootenai watershed in U.S. Geological Survey (USGS) Hydrological Unit Code (HUC) 17010101. The reach of Libby Creek that is the receiving water does not have a Montana stream assessment identification; Montana stream assessment unit MT76D002_061 (Libby

Creek, from 1 mile above Howard Creek to the Highway 2 bridge) begins about 0.5 miles downstream from monitoring station 150LB-300. The designated water-use classification for the drainage is summarized below.

Classification	Beneficial Uses
B-1	Drinking, culinary and food processing purposes after conventional treatment Bathing, swimming, and recreation Growth and propagation of salmonid fishes and associated aquatic life, waterfowl, and furbearers Agricultural and industrial water supply

The general provisions of ARM 17.30.637(1) apply to all categories of state surface water. These provisions require that state waters must be free from substances which will: (a) settle to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines; (b) create floating debris, scum, a visible oil film (or be present in concentrations at or in excess of 10 milligrams per liter) or globules of grease or other floating materials; (c) produce odors, colors or other conditions as to which create a nuisance or render undesirable tastes to fish flesh or make fish inedible; (d) create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life; and (e) create conditions which produce undesirable aquatic life.

In addition to these general provisions, DEQ has determined that following additional provisions of ARM 17.30.637 are applicable to the receiving water:

At the point of discharge the receiving water is considered perennial and therefore the specific water quality standards identified in ARM 17.30.623 are applicable to the receiving water for these outfalls. The specific water quality standards are summarized in Appendix 1.

Water Use Classification and Standards, Outfalls 003, 004, and 005

The receiving water for Outfalls 003, 004, and 005 is Libby Creek. Libby Creek is located within the Upper Kootenai watershed (HUC 17010101 The reach of Libby Creek that is the receiving water does not have a Montana stream assessment identification; Montana stream assessment unit MT76D002_061 (Libby Creek, from 1 mile above Howard Creek to the Highway 2 bridge) begins about 0.5 miles downstream from monitoring station 150LB-300. The designated water-use classification for the drainage is summarized below.

Classification	Beneficial Uses
B-1	Drinking, culinary and food processing purposes after conventional treatment Bathing, swimming, and recreation Growth and propagation of salmonid fishes and associated aquatic life, waterfowl, and furbearers Agricultural and industrial water supply

The general provisions of ARM 17.30.637(1) apply to all categories of state surface water. These provisions require that state waters must be free from substances which will: (a) settle to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines; (b) create floating debris, scum, a visible oil film (or be present in concentrations at or in

excess of 10 milligrams per liter) or globules of grease or other floating materials; (c) produce odors, colors or other conditions as to which create a nuisance or render undesirable tastes to fish flesh or make fish inedible; (d) create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life; and (e) create conditions which produce undesirable aquatic life.

In addition to these general provisions, DEQ has determined that following additional provisions of ARM 17.30.637 are applicable to the receiving water:

At the point of discharge the receiving water is considered perennial and therefore the specific water quality standards identified in ARM 17.30.623 are applicable to the receiving water for these outfalls. The specific water quality standards are summarized in Appendix 1.

Water Use Classification and Standards, Outfall 006

The receiving water for Outfall 006 is Ramsey Creek. Ramsey Creek is located within the Upper Kootenai watershed (HUC 17010101). A Montana stream assessment unit identification is not available for this stream. The designated water-use classification for the drainage is summarized below.

Classification	Beneficial Uses
B-1	Drinking, culinary and food processing purposes after conventional treatment Bathing, swimming, and recreation Growth and propagation of salmonid fishes and associated aquatic life, waterfowl, and furbearers Agricultural and industrial water supply

The general provisions of ARM 17.30.637(1) apply to all categories of state surface water. These provisions require that state waters must be free from substances which will: (a) settle to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines; (b) create floating debris, scum, a visible oil film (or be present in concentrations at or in excess of 10 milligrams per liter) or globules of grease or other floating materials; (c) produce odors, colors or other conditions as to which create a nuisance or render undesirable tastes to fish flesh or make fish inedible; (d) create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life; and (e) create conditions which produce undesirable aquatic life.

In addition to these general provisions, DEQ has determined that following additional provisions of ARM 17.30.637 are applicable to the receiving water:

At the point of discharge the receiving water is considered perennial and therefore the specific water quality standards identified in ARM 17.30.623 are applicable to the receiving water for these outfalls. The specific water quality standards are summarized in Appendix 1.

Water Use Classification and Standards, Outfalls 007 and 008

The receiving water for Outfalls 007 and 008 is Poorman Creek. Poorman Creek is located within the Upper Kootenai watershed (HUC 17010101). A Montana stream assessment unit identification

is not available for this stream. The designated water-use classification for the drainage is summarized below.

Classification	Beneficial Uses
B-1	Drinking, culinary and food processing purposes after conventional treatment Bathing, swimming, and recreation Growth and propagation of salmonid fishes and associated aquatic life, waterfowl, and furbearers Agricultural and industrial water supply

The general provisions of ARM 17.30.637(1) apply to all categories of state surface water. These provisions require that state waters must be free from substances which will: (a) settle to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines; (b) create floating debris, scum, a visible oil film (or be present in concentrations at or in excess of 10 milligrams per liter) or globules of grease or other floating materials; (c) produce odors, colors or other conditions as to which create a nuisance or render undesirable tastes to fish flesh or make fish inedible; (d) create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life; and (e) create conditions which produce undesirable aquatic life.

In addition to these general provisions, DEQ has determined that following additional provisions of ARM 17.30.637 are applicable to the receiving water:

At the point of discharge the receiving water is considered perennial and therefore the specific water quality standards identified in ARM 17.30.623 are applicable to the receiving water for these outfalls. The specific water quality standards are summarized in Appendix 1.

Water Quality Standards, Outfalls 001-008

The numeric water quality standards applicable to the discharges from Outfalls 001-008 are summarized in Appendix 1. The applicable water quality standards are based on design conditions discussed in Section 2.2.8 of this fact sheet. The magnitude of some numeric standards is dependent on characteristics of the receiving water (such as hardness, pH, and temperature) and is summarized in Table 12; additional receiving water characteristics are found in Appendix 2.

Table 12. Basis for Certain Numeric Water Quality Standards

Dependent Parameter	Measured Upstream Parameter	Statistic
Metals – Cadmium, Copper, Chromium (III), Lead, Nickel, Silver, and Zinc	Total Hardness (mg/L as $CaCO_3$)	25^{th} percentile
Ammonia – Acute	pH	75^{th} percentile
Ammonia – Chronic	pH	75^{th} percentile
	Temperature	75^{th} percentile

2.2.3 Nutrient Variance Request

The WQA establishes a process for granting individual, general and alternative variances from the base numeric nutrient standards in DEQ-12A (75-5-313, MCA; ARM 17.30.660). A nutrient variance may be granted for a period not to exceed 20 years. Procedures for implementing a general variance are at 75-5-313(5)(a), MCA and in Section 2.0 of Circular DEQ-12B; procedures granting an individual nutrient variance are at 75-5-313(1-4), MCA and in Section 3.0 of Circular DEQ-12B. Authorization of a general variance in a MPDES permit requires that the permittee conduct a wastewater facility optimization study; this requirement is further discussed in Section 4.3 of this fact sheet.

The facility is located in the Northern Rockies (15) ecoregion; numeric nutrient standards for total nitrogen and total phosphorus apply from July 1 through September 30.

On June 29, 2015, the permittee requested that the general variance for both total nitrogen and total phosphorus be incorporated into the permit and indicated that the facility design flow is less than 1.0 million gallons per day (mgd). DEQ has granted the variance request for total nitrogen; a variance for total phosphorus is not necessary since the facility does not show reasonable potential to violate this nutrient standard (see Sections 2.2.7 through 2.2.9 below for further discussion).

2.2.4 Impaired Waters

The WQA at 75-5-702, MCA requires that DEQ monitor state waters and assess the quality of those waters to identify surface water bodies or segments of water bodies whose designated uses are threatened or impaired. The WQA at 75-5-703, MCA requires that DEQ complete a Total Maximum Daily Load (TMDL) for those water bodies that are identified as threatened or impaired. These requirements satisfy Sections 303(d) and 305(b) of the federal CWA.

Upon approval of the TMDL, the wasteload allocation (WLA) developed for a point source must be incorporated into the facility's discharge permit. A WLA is defined as the portion of the receiving water's loading capacity that is allocated to one of its existing or future point sources. Pending completion of a TMDL on a listed waterbody, a point source discharge may continue or commence provided that: 1) the discharge is in conformance with the state's nondegradation policy and rules; 2) the discharge will not cause a decline in water quality for any parameter by which the water body is impaired; and, 3) minimum treatment requirements are met.

2014 303(d) List

The reach of Libby Creek that is the receiving water is not listed as impaired on Montana's 2014 Clean Water Act 303(d) list.

Ramsey Creek is not listed as an impaired on Montana's 2014 Clean Water Act 303(d) list.

Poorman Creek is not listed as an impaired on Montana's 2014 Clean Water Act 303(d) list.

TMDL Not Required

No impairments have been identified in the direct receiving waters of Libby Creek requiring the development of TMDL.

TMDL Required but Not Complete

Montana stream assessment unit MT76D002_061 (Libby Creek, from 1 mile above Howard Creek to the Highway 2 bridge) begins about 0.5 miles downstream from monitoring station 150LB-300. This reach is listed as not supporting aquatic life; the probable causes of impairment are listed as physical substrate habitat alterations and/or alteration in stream-side or littoral vegetative covers. A TMDL for these impairments has not been completed for MT76D002_61. At this time there are no water quality standards or effluent limitations directly implementable in a MPDES permit that address the corrective measures required for these probable causes of impairment.

TMDL Completed

A TMDL for Montana stream assessment unit MT76D002_062 (Libby Creek, from the Highway 2 bridge to mouth (Kootenai River)) is complete (*Kootenai – Fisher Project Area Metals, Nutrients, Sediment, and Temperature TMDLs and Water Quality Improvement Plan*, approved May 7, 2014). The TMDL for sediment, expressed as an average annual load, for Montana stream assessment unit MT76D002_062 is 4,234 tons/year. As part of this TMDL, the facility is assigned a WLA of 24 tons/year. This WLA, applied as a WLA for TSS applicable to all permitted outfalls at the facility, will be implemented in this permit issuance.

2.2.5 Pollutants and Parameters of Concern

WQBEL are only assessed for those parameters or pollutants of concern (POC) based on the effluent characteristics and the water quality objectives for the affected receiving water(s). DEQ has identified the POCs listed in Table 13 below for purposes of assessing WQBELs.

Parameters of Concern Where a TMDL is Either Complete or Needed

Included in this list is any pollutant that has an assigned wasteload allocation as part of a TMDL. Effluent limitations for these pollutants are established regardless of whether or not there is reasonable potential for the pollutants to be present in the discharge at levels that would cause or contribute to a violation of water quality standards.

Temperature

Additional temperature data for Libby Creek at monitoring stations 150LB-200 and 150LB-300 are in Appendix 6. The data indicates that the observed temperatures for Libby Creek were within the range of temperatures necessary for bull trout survival (U.S. Fish and Wildlife Service) but potentially below temperatures for optimal bull trout growth (Idaho Department of Environmental Quality; Selong *et al*.). This permit will require both upstream and downstream monitoring of temperature in Libby Creek.

Table 13. Parameters and Pollutants of Concern

Parameter	Basis for Identifying a Parameter as a Pollutant of Concern
Outfalls 001-003	
TSS, Copper, Zinc, Lead, Mercury, Cadmium, pH	Applicable TBELs
TDS, Cadmium, Chromium, Copper, Iron, Manganese, Mercury, Lead, Zinc, Total Inorganic Nitrogen, Total Ammonia	Existing WQBELs (including parameters listed in the BHES Order)
TSS, Nitrate + Nitrite, Total Organic Nitrogen, Oil & Grease, Total Phosphorus, Sulfate, Aluminum, Barium, Iron, Magnesium, Manganese, Antimony, Arsenic, Cadmium, Chromium, Copper, Lead, Zinc	Identified on applications Forms 1, 2C, or 2F
None Identified	Receiving Waters Listed on 303(d) list
TSS	TMDL Complete and WLA Assigned
Oil & Grease, Aluminum	Existing Sources: Present in discharge at levels exceeding any applicable water quality standard
None Identified	New Sources: Present or expected in discharge at levels exceeding any nondegradation criterion or cause change in existing water quality
Outfalls 004-008	
NA	Applicable TBELs
NA – New Permit	Existing WQBELs
TSS, Oil & Grease, Nitrate (Outfall 004 only), Metals (e.g. Iron, Manganese, and Zinc; Outfall 004 only)	Identified on applications Forms 1or 2F
None Identified	Receiving Waters Listed on 303(d) list
TSS	TMDL Complete and WLA Assigned
None Identified	Existing Sources: Present in discharge at levels exceeding any applicable water quality standard
TSS	New Sources: Present or expected in discharge at levels exceeding any nondegradation criterion or cause change in existing water quality

2.2.6 Nondegradation Analysis

The WQA includes a nondegradation policy at 75-5-303, MCA which protects existing water quality from undue degradation. This policy applies to any new or increased activity which results in a change in existing water quality. The WQA states that it is unlawful to cause degradation of state waters unless authorized by DEQ pursuant to ARM 17.30.706-708. The regulations at ARM 17.30.701 *et seq*. implement the state's nondegradation policy. The level of protection provided to the receiving water(s) is specified in ARM 17.30.705(2) and conforms to three "tiers" of the federal antidegradation policy at 40 CFR 131.12. These three levels of protection are as follows:

- *Protection of Existing Uses (Tier 1)* – Existing and anticipated (designated) uses of state waters and the level of water quality necessary to protect those uses must be maintained and protected

(ARM 17.30.705(2)(a)). Tier I protection applies to all state waters including waters not designated as high quality. The effluent limitations applied to outfalls subject to this level of protection are derived from and comply with the state's numeric and narrative water quality standards and, therefore, ensure the level of water quality necessary to attain and maintain existing and anticipated uses are fully protected. In accordance with ARM 17.30.706(3)(d) effluent limitations based on this level of protection might need to be based on protection of any downstream or downgradient receiving waters, which could require a higher level of protection.

- *Protection of High Quality Waters (Tier 2)* – Unless authorized by DEQ under ARM 17.30.706 – 708 (authorization to degrade) or exempted from review under 75-5-317, MCA, the quality of high-quality waters must be maintained (ARM 17.30.705(2)(b) and 75-5-303(2), MCA). High quality waters, as defined in 75-5-103(10), MCA and ARM 17.30.702(8), includes all state surface waters except those not capable of supporting any one of the designated uses for their classification or that have zero flow or surface expression for more than 270 days during most years. Any water body for which the critical receiving water pollutant concentration (C_s) is less than the applicable water quality standard (S) is considered high quality. This determination is made on a parameter by parameter basis and may include waters listed on the state's 303(d) list.
- *Protection of Outstanding Resource Waters (Tier 3)* – ARM 17.30.705(2)(c) requires that, for outstanding resource waters, no degradation is allowed and no permanent change in the quality of outstanding resources waters resulting from a new or increased point source discharge is allowed.

DETERMINATION – EXISTING, NEW, OR INCREASED SOURCES

For the purposes on nondegradation, DEQ has made the following determinations, based on the information provided in Section 1.1 of this fact sheet, for each outfall with respect to the proposed discharges. This information is summarized in Table 14.

Table 14. Source Determination

Outfall(s)	Receiving Water	Source Determination	Nondegradation - Level of Protection Required
001, 002	Libby Creek via Alluvial Ground Water	Existing	Tier 2 with an Authorization to Degrade(1)
003	Libby Creek	Existing	Tier 2 with an Authorization to Degrade(1)
004, 005	Libby Creek	New(2)	Tier 2 with an Authorization to Degrade(1)
006	Ramsey Creek	New(2)	Tier 2 with an Authorization to Degrade(1)
007, 008	Poorman Creek	New(2)	Tier 2 with an Authorization to Degrade(1)

Footnotes:
1. For only the parameters that are listed in the BHES Order.
2. For only the parameters that are not listed in the BHES Order.

IMPLEMENTATION

Existing Sources

For existing sources discharging to Tier 2 waters that are not subject to review under the nondegradation policy, the WQBELs in Section 2.2.9 are derived from and comply with either the

state's water quality standards or the Board-issued authorization to degrade, ensuring the level of water quality necessary to attain and maintain existing and anticipated beneficial uses.
On November 20, 1990, the BHES granted NMC's petition to lower water quality in the ground water and surface water adjacent to the Montanore Project, establishing limits in surface water and ground water in the Libby, Poorman and Ramsey Creek watersheds for discharges from the facility (BHES 93-001-WQB). The Order established numeric limits for chromium, copper, iron, manganese, zinc, nitrate + nitrite, total ammonia, and total dissolved solids; the limits determined by the BHES supersede and/or replace any nondegradation-derived effluent limits or water quality standards for the parameters specified in the Order.

New Sources

For new sources discharging to Tier 2 receiving waters and in the absence of a request by the permittee to degrade state waters, DEQ develops WQBELs based on criteria for determining nonsignificant changes in water quality in ARM 17.30.715(1). For purposes of determining the significance of a proposed activity or discharge, the change is measured relative to the existing water quality. Existing water quality means the quality of the receiving water, including chemical, physical, and biological conditions immediately prior to commencement of the proposed activity or discharge, or that which may be adequately documented to have existed on or after July 1, 1971, whichever is the highest quality [ARM 17.30.702(4)]. DEQ uses the 25th percentile of the background water quality of the receiving water as the "existing water quality."

Since WQBELs for pollutants or parameters discharged to high quality waters are derived from and comply with the criteria for determining nonsignificant changes in water quality, they protect the existing water quality of a high quality receiving water to the extent practicable. Any applicable nondegradation criteria for the parameters of concern are summarized in Appendix 1. Though the nondegradation criteria are not numeric water quality standards, a discharge that meets these criteria is in compliance with Montana's nondegradation policy. New sources that are able to meet WQBELs based on application of nonsignificance criteria are not required to submit an authorization to degrade state waters under ARM 17.30.706-708. Any applicable WQBELs calculated from nondegradation criteria are discussed in Appendix 5. The WQBELs for new discharges to Tier 2 receiving waters are based on the nonsignificance criteria at ARM 17.30.715(1); these criteria are summarized below in Table 15.

The nonsignificance criteria were developed based on consideration of the quantity and strength of the pollutant, the length of time the changes will occur, and the character of the pollutant (ARM 17.30.715). DEQ has determined that with the proper selection, installation, and maintenance of BMPs, the discharge of storm water and storm water-driven sediment does not represent significant degradation since the magnitude, duration, and frequency of any storm water discharge events (and their potential short-term impacts) are minimized and/or eliminated. DEQ finds that the proposed discharge is a nonsignificant change in existing water quality due to its low potential to affect human health or the environment.

The discharge of storm water from Outfalls 004-008 have been determined to be nonsignificant (see 75-5-303(3)(d), MCA and 75-5-317(2)(b), MCA) since this permit stipulates that (in addition to any applicable numeric standards required) BMPs must be implemented prior to the commencement of

any regulated activities at these outfalls. The permit also includes provisions for the ongoing evaluation of BMPs to ensure the minimization or elimination of the pollutants contained in storm water runoff. If the permittee provides information that indicates the discharge will not meet conditions of ARM 17.30.715(1) then DEQ will require the permittee to either amend the BMPs in order to comply with Montana's nondegradation policy or to modify the MPDES permit for the facility with the incorporation of numeric effluent limits on the parameters in question.

Table 15. Nonsignificance Criteria for Discharges to Tier 2 Receiving Waters

Category of Parameter	Criterion (S_{ND})	Basis
Flow	± 15% of the Mean Monthly Flow or ± 10% of the 7Q10	ARM 17.30.715(1)(a)
Carcinogens or parameters with a bioconcentration factor greater than 300	Background (C_{75})	ARM 17.30.715(1)(b)
Toxic	15% of applicable standard	ARM 17.30.715(1)(c)
Harmful (other than carcinogenic, bioconcentrating, or toxic parameters) and parameters listed in Circular DEQ-12A)	10% of applicable standard if receiving water quality is 40% of applicable standard	ARM 17.30.715(1)(f)
Narrative (includes both Conventional and Nonconventional Pollutants listed in 40 CFR 122 Appendix D or in Department Circular DEQ-7)	Background (C_{25})	ARM 17.30.715(1)(h)

Increased Sources

DEQ has determined that there are no increased discharges proposed by the permittee that are subject to nondegradation requirements.

2.2.7 Mixing Zones

A mixing zone is an area where the effluent mixes with the receiving water and certain numeric water quality standards may be exceeded [ARM 17.30.502(6)]. The Board has adopted rules governing the granting of mixing zones in surface and ground water at ARM 17.30.501 *et seq*. These rules require that DEQ determine the applicability of any currently granted mixing zones in the permit renewal process [ARM 17.30.505(1)]. Mixing zones allowed under a permit issued prior to April 29, 1993, will remain in effect unless there is evidence that previously allowed mixing zones will impair existing or anticipated uses [ARM 17.30.505(1)(c)]. Discharges that do not conform to the criteria of ARM 17.30.501 *et seq*. are deemed to be causing impairment and are, therefore, subject to review and modification.

A mixing zone is necessary for any parameter which has a reasonable potential to exceed a water quality standard or nondegradation criterion. A discharger may request a standard or source specific mixing zone during the permit application process and provide the necessary information. DEQ must determine the appropriateness of the requested mixing zone and will either grant the requested mixing zone, deny the mixing zone, or grant an alternative or modified mixing zone (ARM

17.30.515). A mixing zone is not assumed for any parameter unless specifically identified in the fact sheet and authorized in the MPDES permit.

The length of a mixing zone is the distance from the point of discharge to the point in the receiving water where all applicable water quality standards must be met. The length of the mixing zone and dilution ratio must be smallest practicable size and have minimal effect on beneficial uses. The length of the mixing zone must be specified in the permit.

The discharge must also comply with the general prohibitions of ARM 17.30.637(1), which requires that state waters, including mixing zones, be free from certain substances. A mixing zone may not be granted for any parameter subject to either a technology-based effluent limitation(s) or standard(s), or a new source performance standard(s) as described in Section 2.1 of this fact sheet or ARM 17.30.1203-1209. For new sources and discharges, changes in water quality at the boundary of the mixing zone must be must be nonsignificant pursuant to the criteria of ARM 17.30.701 *et seq*.

ACUTE MIXING ZONE

In accordance with ARM 17.30.517(1)(b), acute water quality standards for aquatic life may not be exceeded in any portion of the mixing zone unless DEQ finds that allowing minimal initial dilution will not threaten or impair existing uses. An acute mixing zone (zone of initial dilution) is not granted for any toxic or persistent substances [ARM 17.30.506(1)(d)] unless the discharger demonstrates complete and rapid mixing. Complete and rapid mixing is demonstrated through the use of an effective effluent diffuser.

DEQ does not authorize an acute mixing zone for any parameters.

CHRONIC AND HUMAN HEALTH MIXING ZONES

DEQ may grant a mixing zone for numeric chronic aquatic life, human health, and other narrative water quality standards in Department Circular DEQ-7 or the nondegradation criteria in ARM 17.30.715. A mixing zone may also be granted for chronic WET. Chronic mixing zones are based on the critical flow of the receiving water specified in ARM 17.30.635 and Section 2.2.8 of this fact sheet. Except for nutrients, the design condition for discharges to flowing rivers and streams is the seven-day, 10-year low flow (7Q10). For purposes of water quality-based permitting calculations, the mixing zone provided is generally equated with a dilution allowance (i.e., a percentage of critical low flow) or a dilution ratio (D). ARM 17.30.516(3) defines the dilution ratio as 7Q10 of the stream segment without the discharge divided by the flow of the discharge. The facility design discharge is less than one (1) mgd. The dilution ratio of Libby Creek's 7Q10 to the facility's design discharge is 1.7. Pursuant to ARM 17.30.516(3)(b), DEQ authorizes a chronic mixing zone, at 25% of the 7Q10, at Outfalls 001-003 for the following parameters:

- Nitrate + Nitrite;
- Total Inorganic Nitrogen;
- Chromium;
- Copper
- Iron;
- Lead;

- Manganese; and
- Zinc.

NUTRIENT MIXING ZONE

Nutrients, as listed in Circular DEQ-12A, include the parameters Total Nitrogen and Total Phosphorus. For discharges of nutrients to flowing rivers and streams, the design condition is the 14-day, 5-year low flow (14Q5). The WQBELs for Total Nitrogen and Total Phosphorus must be based on dilution with the entire seasonal 14Q5 low flow of the receiving water without the discharge (ARM 17.30.516(3)(e)). Accordingly, DEQ authorizes dilution with 100% of the 14Q5 at Outfalls 001-003 for the following parameters:

- Total Nitrogen; and
- Total Phosphorus.

GROUND WATER MIXING ZONE

The discharge of pollutants to ground water within the operational boundary is regulated by DEQ's EMB via Operating Permit #00150 (see 75-5-401(5), MCA). This permit is currently undergoing revision by EMB. The 2006-issued MPDES permit for the facility authorized a chronic ground water mixing zone for Outfalls 001 and 002 from their point of discharge to Libby Creek at the downgradient to monitoring station LB-300 for the following parameters:

- Nitrate + Nitrite;
- Total Inorganic Nitrogen;
- Chromium;
- Copper;
- Iron;
- Manganese; and
- Zinc.

The ground water mixing zone authorized in the 1997-issued MPDES permit and continued in the 2006-issued MPDES permit will be retained in this permit renewal.

PREVIOUSLY AUTHORIZED MIXING ZONES

The standard mixing zone authorized in the 1997-issued MPDES permit and continued in the 2006-issued MPDES permit is summarized in Table 16.

Table 16. Previously Authorized Mixing Zone Characteristics

Outfall	Parameters	Length (L)
001	Total Inorganic Nitrogen, Chromium, Copper, Iron, Manganese, and Zinc	Point of discharge via ground water to Libby Creek downgradient to monitoring location LB-300
002	Total Inorganic Nitrogen, Chromium, Copper, Iron, Manganese, and Zinc	Point of discharge via ground water to Libby Creek downgradient to monitoring location LB-300
003	Total Inorganic Nitrogen, Chromium, Copper, Iron, Manganese, and Zinc	Point of discharge into Libby Creek downgradient two stream widths

This standard mixing zone is based, in part, on the facility's Authorization to Degrade (BHES 93-001-WQB) as issued by the Board; the decision to authorize a standard mixing zone is also based on the criteria in ARM 17.30.516(3). Specifically, DEQ determined that Libby Creek is a high gradient, low volume stream where complete and nearly instantaneous mixing was documented based on monitoring data collected between 1990 and 1992. Accordingly, the authorized surface water mixing zone in Libby Creek for Outfalls 001 and 002 was from the point of discharge to monitoring location LB-300; the authorized surface water mixing zone in Libby Creek for Outfall 003 was two (2) stream widths downstream from the point of discharge. This mixing zone is for chronic conditions only; DEQ did not authorize an acute mixing zone for any parameters.

MIXING ZONE DETERMINATION

The mixing zone determination for each outfall is discussed below.

Outfalls 001-003

The standard mixing zone authorized in this MPDES permit issuance is summarized in Table 17. This mixing zone is for chronic conditions only; DEQ does not authorize a mixing zone for any acute parameters.

Table 17. Authorized Mixing Zone Characteristics

Outfall	Parameters	Length (L)
001	Nitrate + Nitrite, Total Inorganic Nitrogen, Chromium, Copper, Iron, Lead, Manganese, and Zinc	Point of discharge via ground water to Libby Creek downgradient to monitoring location LB-300
002	Nitrate + Nitrite, Total Inorganic Nitrogen, Chromium, Copper, Iron, Lead, Manganese, and Zinc	Point of discharge via ground water to Libby Creek downgradient to monitoring location LB-300
003	Nitrate + Nitrite, Total Inorganic Nitrogen, Chromium, Copper, Iron, Lead, Manganese, and Zinc	Point of discharge into Libby Creek downstream two stream widths

Outfalls 004-008

The permittee has not requested a mixing zone for any discharges from Outfalls 004-008; any applicable effluent limitations must be met at the end-of-pipe discharge. DEQ does not authorize a mixing zone for any parameters discharged from Outfalls 004-008.

WATER QUALITY ASSESSMENT

A water quality assessment is required for any authorized mixing zone. In accordance with ARM 17.30.506(1) no mixing zone will be granted if it would threaten or impair any existing beneficial uses.

Outfalls 001-003

A water quality assessment for Libby Creek is presented below in Table 18.

Table 18. Water Quality Assessment

Condition	Basis
Biologically Important Area: Discuss presence of any species of special concern, endangered or listed species; does downstream receiving water support spawning or rearing habitat for these species.	The impacts to Bull trout and grizzly bears and associated mitigations are addressed in the EIS. There is a fish barrier downstream from facility's authorized discharge locations (and their associated mixing zones) that prevents the migration and/or passage of salmonids from the lower reaches of Libby Creek up to the discharge location.
Drinking Water Intake: Distance to nearest downstream drinking water intake.	The only listed public water supply in Lincoln county utilizing surface water as a water source is the city of Libby. The city of Libby uses Flower Creek as their source water; Flower Creek is in a different drainage, and thereby unaffected, by the discharge from the facility. There are no known private intakes.
Recreational Area: Distance to nearest downstream designated recreation area (fish access sites, public beach, etc.).	The facility is within the Kootenai National Forest. The Howard Lake Campground is the closest recreational area; this campground is about two miles east of the facility and is situated in a different drainage unaffected by the facility's discharge. Rapid and complete mixing of the effluent in the receiving water ensures no impairment of use beyond the boundaries of the mixing zone.
Attraction to aquatic life: Describe thermal effect (heating or cooling) of discharge.	Outfalls 001 and 002: discharge to ground water is expected to attenuate any thermal effects; synoptic temperature data indicates less than 1 degree change between monitoring locations 150LB-200 and 150LB-300. Outfall 003: conditions where a direct discharge to Libby Creek is necessary are expected to be limited in duration and frequency during the term of the permit; the adit water treated by the facility is at or near typical ground water temperatures. Heat is not added as part of the facility's wastewater treatment process. Synoptic temperature data indicates less than 1 degree change between monitoring locations 150LB-200 and 150LB-300; a direct discharge is not expected to have a thermal effect on Libby Creek.
Toxic or Persistence Substances: 1. Has effluent been adequately characterized for toxic and persistent parameters, including seasonal variation? 2. Has effluent been adequately characterized for WET, including seasonal variation? 3. Bioavailability of toxic or persistent parameters in far field considered.	Adequate data available for most parameters expected in discharge. Planned operations of the facility indicate that seasonal variation in parameters is not expected. The facility has not performed WET testing; WET testing will be required under this permit. Biological monitoring is required as part of Operating Permit #00150 and under the BHES Order. The water quality standards used in the reasonable potential analysis consider bioavailability (when appropriate).
Passage of aquatic organisms: 1. Area or percent of receiving water unaffected by mixing at design flow. 2. If tributaries present in mixing zone discus why passage is not expected to be affected.	There is a fish barrier downstream from facility's authorized discharge locations (and their associated mixing zones) that prevents the migration and/or passage of salmonids in the upper reaches of Libby Creek. Outfalls 001 and 002: instantaneous mixing assumed due to diffuse discharge from ground water into Libby Creek; fish passage is not expected to be impacted. Outfall 003: high gradient stream system with instantaneous mixing; fish passage is not expected to be impacted.
Cumulative effects: 1. Adequate upstream characterization for all mixing zone parameters (min. 10 samples within 3 years). 2. Distance to nearest downstream point source discharge. 3. Distance to upstream to nearest point source discharge.	Monitoring data dates back as early as 1973. Adequate data available for most parameters. Continued monitoring of ambient upstream conditions is required under this permit renewal. The nearest downstream point source discharge is city of Libby WTP/WWTP; there are no upstream point source discharges regulated by DEQ.

Outfalls 004-008

DEQ does not authorize a mixing zone for any discharges from Outfalls 004-008; a water quality assessment for these outfalls is not required.

2.2.8 Reasonable Potential Analysis and Design Conditions

Montana water quality standards at ARM 17.30.637(2) state that no wastes may be discharged, either alone or in combination with other wastes, or activities, that will violate or may reasonably be

expected to violate any of the standards. The federal regulations at 40 CFR 122.44(d), incorporated by reference at ARM 17.30.1344, require that all effluents be assessed by the permitting authority to determine the need for WQBELs in the permit. Specifically, 40 CFR 122.44(d)(1)(i) states that limitations must be established in permits to control all pollutants or pollutant parameters that are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard. A "reasonable potential analysis" (RPA) is used to determine whether a discharge, alone or in combination with other sources of pollutants to a water body could lead to an excursion above an applicable water quality standard.

40 CFR 122.44(d)(1)(ii) requires that the procedures used by the permitting authority account for: the existing controls on point and nonpoint sources of pollution; the variability of the pollutant or pollutant parameter; the sensitivity of the species to toxicity testing (WET); and, where appropriate, the dilution of the effluent in the receiving water. For purposes of developing water quality based effluent limitations and the RPA, DEQ uses a mass-balance equation, which is a simple, steady-state model. The mass-balance equation is used to determine the concentration of a pollutant of concern after accounting for other sources of pollution in the receiving water and any dilution provided by a mixing zone. The values used in the mass-balance equation applied to a river or stream to establish the maximum allowable change in surface water quality are based on the design conditions specified in the specific water quality standards in ARM 17.30.620-629 and 635; these values are referred to as critical conditions. The critical conditions that determine the values for the variables (Q_s, C_s, Q_d, and C_d) in Equation 1 are discussed below. These critical conditions are incorporated into the mixing zone regulations and nondegradation regulations by reference.

$$Q_rC_r = Q_sC_s + Q_dC_d \text{ (Equation 1)}$$

Where:

Q_r	=	resultant instream flow after discharge ($Q_r = Q_s + Q_d$)
C_r	=	resultant instream pollutant concentration (after available dilution)
Q_s	=	critical stream flow upstream of discharge
C_s	=	critical upstream receiving water pollutant concentration
Q_d	=	critical effluent flow
C_d	=	critical effluent pollutant concentration

The amount of pollutant in the discharge that the receiving water may assimilate and not exceed the applicable water quality standard is referred to as the wasteload allocation (WLA). The procedures for developing WLA follow federal guidance for developing waste load allocations (*Stream Sampling for Waste Load Allocation Applications* (EPA/625/6-86/013, September 1986); *Technical Guidance Manual for Performing Waste Load Allocations, Book VII: Permit Averaging Period* (EPA/440/4-87.002, September 1984); *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001)).

CRITICAL STREAM FLOW (Q_s)

The critical stream flow is based on the applicable provisions of ARM 17.30.620-629 requiring that discharge permits do not cause the receiving water concentrations to exceed any applicable standards when stream flows equal or exceed the critical flows. ARM 17.30.635(4) states that the receiving water critical flow for point source discharges must be based on the minimum consecutive seven day

average flow that is expected to occur, on average, once in 10 years (7Q10). If there is insufficient data to establish a 7Q10, DEQ must establish an acceptable stream flow. In accordance with ARM 17.30.635(4), effluent limitations for controlling nitrogen and phosphorus concentration in surface water are based on the seasonal 14Q5, which is the lowest average 14 consecutive day low flow, occurring from July through October, with an average recurrence frequency of once in five years.

The 7Q10 presented below is based on data collected at monitoring station 150LB-200 in Libby Creek. This location is upstream about 2,500 feet from the discharge points authorized in the MPDES permit for the facility. The USGS data analyzed is from *Statistical Summaries of Streamflow in Montana and Adjacent Areas, Water Years 1900 through 2009* (in draft).

Since there is not an established 14Q5 for Libby Creek, a reasonable estimation of the 14Q5 for Libby Creek at 150LB-200 must be determined. This is accomplished by taking the known 7Q10 for Libby Creek, estimating the drainage area (in acres) for Libby Creek, and comparing these values to a known drainage using the equation below:

$$A_1(Q_1/Q_2) = A_2(Q_3/Q_4) \text{ (Equation 2)}$$

Where:

A_1 = Flower Creek drainage area, square miles
Q_1 = Flower Creek 14Q5, cfs
Q_2 = Flower Creek 7Q10, cfs
A_2 = Libby Creek drainage area, square miles
Q_3 = Libby Creek 14Q5, cfs
Q_4 = Libby Creek 7Q10, cfs

Flower Creek, near the city of Libby, is within a nearby drainage, is on the same side of the continental divide, is roughly the same area, and is expected to have similar climatic influences when compared to the reach of Libby Creek at the facility's discharge location. Based on the USGS data for Flower Creek, the 14Q5 is 4.26 cfs, the 7Q10 is 4.10 cfs, and the drainage area is 11.25 square miles. Based on an evaluation of the topographic map for the Libby Creek drainage, the drainage area of Libby Creek from the headwaters to 150LB-200 is estimated at 10.79 square miles. Assuming that the ratio of the 14Q5:7Q10 is similar for both Flower Creek and Libby Creek and accounting for differences in drainage areas, solving Equation 2 for Q_3 results in a 14Q5 for Libby Creek of 2.06 cfs. The critical stream flows for Outfalls 001-003 as well as the sources of information for determining the critical flows are summarized in Table 19.

Table 19. Libby Creek Critical Stream Flows

Outfall(s)	7Q10 (cfs)	14Q5 (cfs)	Ground Water Flux (cfs)	Information Source(s)
001, 002	1.6	NA	0.67	1997-issued Fact Sheet
001, 002, 003	1.9	NA	NA	2015 EIS; 2015 (est.) ROD
001, 002, 003	NA	2.06	NA	USGS; 2015 Fact Sheet
003	1.6	NA	NA	1997-issued Fact Sheet

Footnotes:
NA = Not Applicable

For Outfalls 001 and 002 only, Q_s is the sum of the 7Q10 and the ground water flux. The critical stream flows in Ramsey Creek and Poorman Creek for Outfalls 004-008 are not presented since any effluent limit(s) applicable to the discharge from these outfalls must be met at their respective point of discharge; the use of any critical stream flows in meeting or determining applicable effluent limits is not authorized.

CRITICAL BACKGROUND RECEIVING WATER POLLUTANT CONCENTRATION (C_s)

The critical pollutant concentration is the average concentration in the receiving water during the critical stream flow. Chronic standards for aquatic life are based on the 96-hour average concentration in the receiving water and acute standards are based on the one hour average concentration in the receiving water (Department Circular DEQ-7). Since baseline data is collected as single grab samples over time it does not represent the average concentration for either averaging period; therefore the background concentration must be determined using other methods.

For purposes of the reasonable potential analysis and determining assimilative capacity, the critical background concentration (C_s) is defined to be the 75th percentile or upper bound estimate of the data. In some cases, including application of the nondegradation criteria in ARM 17.30.715(1), changes in existing water quality or the water quality standard is expressed relative to the background concentration in the receiving water. In these situations the WQBEL is based on the lower bound estimate of the interquartile range (25th percentile value) to maintain the existing water quality of the receiving water. See Appendix 2 for a more detailed description of the procedures used to estimate the value of C_s for the applicable receiving waters.

CRITICAL EFFLUENT FLOW (Q_d)

Effluent flow is a measure of the average daily flow expected to occur over the next 5-year permit cycle or the effective life of the regulated facility or activity. Typically the critical flow is based on the maximum 30-day (monthly) average over the previous permit cycle for existing facilities or on the estimated average daily flow for new discharges. The critical effluent flows used for the water quality assessment of the discharges from Outfalls 001-003 as well as the sources of information and the period of record for determining the critical effluent flows are summarized in Table 20.

Table 20. Critical Effluent Flow at Each Outfall

Outfall(s)	Q_d	Information Sources
001, 002, 003	365 gpm	Form 1, Form 2C
001, 002, 003	500 gpm	Supplemental Materials, Administrative Record for MPDES Permit MT0030279
001	374 gpm	Maximum flow value as reported by the permittee on DMRs for the facility

For the purposes of this MPDES permit renewal, DEQ will use 500 gpm as the Q_d for the facility.

CRITICAL EFFLUENT POLLUTANT CONCENTRATION (C_d)

The critical effluent concentration is based on the 95th percentile of the expected effluent concentration observed or predicted in the discharge. Due to the low frequency (percentage) of samples and the non-normal distribution of most effluents, DEQ follows the estimation procedures

described in EPA's *Technical Support Document for Water Quality Based Toxic Control* (EPA/505/2-90-001, March 1991) to estimate the 95th percentile of the daily values. Critical effluent concentration is not used to determine the value of a water quality-based effluent limitation.

The application and supplemental materials as well as DMRs submitted by the permittee provide the basis for determining the critical effluent pollutant concentrations. The critical effluent pollutant concentrations (C_d) and the estimation procedures are given in Appendix 3 for Outfalls 001-003.

REASONABLE POTENTIAL ANALYSIS

The mass-balance equation (Equation 1) may be expressed in terms of the dilution ratio at the edge of the approved mixing zone. The dilution ratio is the volume of receiving water at the edge of the mixing zone to the volume of effluent at the edge of the mixing zone. Equation 3 below is the mass-balance equation (Equation 1) arranged to solve for the receiving water concentration of a pollutant of concern:

$$C_r = \frac{C_d + (D * C_s)}{(1 + D)} \quad \text{(Equation 3)}$$

Where:

C_r = resultant instream pollutant concentration (after any available dilution)
C_d = critical effluent pollutant concentration
C_s = critical upstream receiving water pollutant concentration
D = dilution ratio (Q_s / Q_d)

For Outfalls 001 and 002 only, Q_s is the sum of the 7Q10 and the ground water flux. The chronic and acute dilution ratios for the facility are summarized in Table 21 below.

Table 21. Dilution Ratio Summary

Outfall(s)	Q_s (gpm)	Q_d (gpm)	Chronic Dilution Allowance (%)	Acute Dilution Allowance (%)	Chronic Dilution Ratio (D_C)	Acute Dilution Ratio (D_A)
001, 002	1,154[1]	500	25[2]	0	0.6	0
003	853	500	25[2]	0	0.4	0
Nutrients	925	500	100[3]	--	1.9	--

Footnotes:
1. This value includes the amount of allowed dilution in ground water prior to entering Libby Creek.
2. For the following parameters only: chromium, lead, zinc, iron, manganese, and nitrate + nitrite.
3. For the following parameters only: total nitrogen and total phosphorus.

The receiving water data (C_s) and effluent data (C_d) are based on the critical conditions as discussed above and the analysis presented in Appendices 2 and 3, respectively.

Where the projected receiving water concentration (C_r) exceeds any applicable numeric standard for a parameter of concern, there is a finding of reasonable potential and a WQBEL must be calculated for that parameter. Appendix 4 of this fact sheet provides a complete description of the RPA and

results for the applicable outfalls and discharges from this facility. A summary of this analysis is provided in Table 22.

Table 22. Reasonable Potential Analysis – Summary

Outfall(s)	Parameters	RPA Determination (Yes/No/Undetermined)	Rationale/Comments
001, 002, 003	Chromium, Lead, Zinc, Iron, Nitrate + Nitrite, Total Nitrogen, Oil & Grease	Yes	C_r > Applicable Standard
001, 002, 003	Cadmium, Copper, Mercury, Manganese, Total Ammonia, Total Inorganic Nitrogen, Total Phosphorus, Aluminum, Antimony, Barium	No	C_r < Applicable Standard
001, 002, 003	TDS, Arsenic	Undetermined	C_s and/or C_d data does not meet QA/QC requirements
004	TSS, Nitrate, Oil & Grease, Iron, Manganese, Zinc	Undetermined	No C_d data available
005-008	TSS, Oil & Grease	Undetermined	No C_d data available

REASONABLE POTENTIAL ANALYSIS – STORM WATER

In accordance with 40 CFR 122.44, WQBELs are required when TBELs are not protective of state water quality standards or nondegradation criteria. This permit establishes a requirement for BMPs as a TBEL. A discharge of storm water without BMPs in place may exceed water quality standards and/or nondegradation criteria. Additionally, the TBELs prohibit the discharge of any process wastewater or any water resulting from mine dewatering activities at Outfalls 004-008. Finally, the TBELs require the installation and maintenance of site-specific BMPs that are an effective method for controlling the discharge of storm water and will minimize or eliminate any potential short-term storm water impacts associated with the discharge of storm water.

Outfalls 001-003

At these outfalls, storm water comes in contact with waste rock and is subject to both the TBELs and WQBELs discussed in the sections above.

Outfalls 004-008

Lacking specific data characterizing the effluent for these outfalls, DEQ is establishing WQBELs based on the water quality standards at ARM 17.30.623 for parameter pH and the general prohibitions at ARM 17.30.637 for the parameter oil & grease.

REASONABLE POTENTIAL ANALYSIS – WET

In addition to specific chemical parameters, federal regulations at 40 CFR 122.44(d)(1) specify that the discharge permit must contain effluent limitations to control toxicity when DEQ determines that the discharge has a reasonable potential to violate numeric or narrative criterion prohibiting toxicity. Montana Water Quality Standards at ARM 17.30.635 prohibit the discharge of substances that will create concentrations or combinations of materials which are toxic or harmful to human, animal, plant, or aquatic life. ARM 17.30.646 requires the use of bioassay or WET tests using the most sensitive local or economically important species to implement aquatic life prohibition of toxicity in state waters.

WET testing is required for industrial discharges that DEQ determines may contain toxic pollutants, or where these effluents have not been fully characterized for the presence of toxic pollutants. Facilities that discharge non-process wastewaters are generally not required to conduct WET testing. For additional information and decision criteria, refer to *Montana DEQ Whole Effluent Toxicity (WET) Testing Policy and Procedures* (in draft).

Outfalls 001-003

The 1997-issued and 2006-issued permits contained a narrative standard prohibiting acute toxicity in the effluent discharged by the facility; WET monitoring was not required in either of these permits. The permittee has not conducted any WET testing; a RPA for WET has not been performed.

DEQ has determined that, given the expected nature and constituents of the effluent discharged from the facility, the renewed permit will require WET monitoring. The dilution ratio of the 7Q10 for Libby Creek (1.9 cfs) to the average discharge from the facility (1.1 cfs) is 1.7. Based on this, the appropriate WET monitoring for the facility is the chronic WET test. The WET monitoring and reporting requirements are further discussed in Section 3.1.2 of this fact sheet.

Outfalls 004-008

DEQ has determined that WET testing on the discharge from Outfalls 004-008 is not required due to the expected nature and constituents (runoff driven sediment) of any discharges from these outfalls. Additionally, the monitoring requirements and the required BMPs in this permit will provide the necessary level of protection for state waters.

2.2.9 Water Quality-based Effluent Limitations

To establish WQBELs for an existing discharger, DEQ first calculates the WLAs from the numeric water quality standards based on the applicable acute aquatic life, chronic aquatic life, or human health standards (as listed in the current version of Department Circular DEQ-7), nondegradation criteria, or those standards as determined by the Board in granting an authorization to degrade. These WLAs are then translated into average monthly limitations (AMLs) and maximum daily limitations (MDLs) to reflect the respective averaging times given in the surface water quality standards (ARM 17.30.635) and Department Circular DEQ-7.

The mass-balance equation (Equation 1) given in Section 2.2.8 is arranged to calculate the WLA such that the discharge does not cause or contribute to an exceedance of the applicable water quality standard under critical conditions:

$$WLA = S + D(S - C_s) \quad \text{(Equation 4)}$$

Where:

WLA	=	calculated wasteload allocation
S	=	applicable numeric water quality standard
D	=	dilution ratio (see Sections 2.2.7 and 2.2.8)
C_s	=	critical upstream receiving water pollutant concentration

Rearranging Equation 1 in this manner allows for the application of Equation 4 to any effluent and receiving water where the dilution ratio is known. Where an existing discharge is to a water body

that is not meeting a concentration-based numeric standard in the water column the WLAs for that pollutant of concern may be set equal to the applicable numeric water quality standards.

WLAs are then translated into MDLs and AMLs using the procedures outlined in Appendix 5. The calculated WQBELs based on the applicable water quality standard, nondegradation criteria, authorization to degrade, or approved TMDL is presented below in Tables 23 through 26.

Table 23. WQBELs for Sum of Outfalls 001 – 008

Parameter	Units[(1)]	Annual Maximum[(2)]	Basis for Limitations
Total Suspended Solids	tons/year	24	TMDL

Footnotes:
1. Sum of all daily discharges from the facility, converted into tons/year.
2. For the calendar year.

Table 24. WQBELs for Outfalls 001 – 002

Parameter	Units	Average Monthly Limitation (AML)	Maximum Daily Limitation (MDL)	Basis for WQBEL Calculations
Total Dissolved Solids	mg/L	86	172	Authorization to Degrade
Total Inorganic Nitrogen, as N	mg/L	1.2	NA	Authorization to Degrade
Chromium, Total Recoverable	µg/L	4.6	9.2	Authorization to Degrade
Copper, Total Recoverable	µg/L	2.9	5.9	Authorization to Degrade
Iron, Total Recoverable	µg/L	106	212	Authorization to Degrade
Manganese, Total Recoverable	µg/L	55	111	Authorization to Degrade
Zinc, Total Recoverable	µg/L	23	46	Authorization to Degrade
Cadmium, Total Recoverable[(1)]	µg/L	0.08	0.16	Water Quality Standard
Mercury, Total Recoverable[(1)]	µg/L	0.050	0.050	Water Quality Standard
Lead, Total Recoverable	µg/L	0.44	0.89	Water Quality Standard
Oil & Grease	mg/L	NA	10	Water Quality Standard
pH	s.u.	Within the range of 6.5 – 8.5 at all times		Water Quality Standard
Total Ammonia, as N	mg/L	1.9	3.8	Authorization to Degrade
Nitrate + Nitrite, as N	mg/L	7.0	14.1	Authorization to Degrade
Total Nitrogen, as N	lbs/day	93.1[(2)]	NA	Nutrient Variance

Footnotes:
NA = Not Applicable
1. WQBEL developed due to stringency requirements.
2. Limits effective July 1st through September 30th of each year.

Table 25. WQBELs for Outfall 003

Parameter	Units	Average Monthly Limitation (AML)	Maximum Daily Limitation (MDL)	Basis for WQBEL Calculations
Total Dissolved Solids	mg/L	85	170	Authorization to Degrade
Total Inorganic Nitrogen, as N	mg/L	1.1	NA	Authorization to Degrade
Chromium, Total Recoverable	µg/L	4.4	8.9	Authorization to Degrade
Copper, Total Recoverable	µg/L	2.8	5.6	Authorization to Degrade
Iron, Total Recoverable	µg/L	100	200	Authorization to Degrade
Manganese, Total Recoverable	µg/L	52	103	Authorization to Degrade
Zinc, Total Recoverable	µg/L	22	45	Authorization to Degrade
Cadmium, Total Recoverable(1)	µg/L	0.08	0.16	Water Quality Standard
Mercury, Total Recoverable(1)	µg/L	0.050	0.050	Water Quality Standard
Lead, Total Recoverable	µg/L	0.44	0.89	Water Quality Standard
Oil & Grease	mg/L	NA	10	Water Quality Standard
pH	s.u.	Within the range of 6.5 – 8.5 at all times		Water Quality Standard
Total Ammonia, as N	mg/L	1.7	3.5	Authorization to Degrade
Nitrate + Nitrite, as N	mg/L	6.4	12.8	Authorization to Degrade
Total Nitrogen, as N	lbs/day	93.1(2)	NA	Nutrient Variance

Footnotes:
NA = Not Applicable
1. WQBEL developed due to stringency requirements.
2. Limits effective July 1st through September 30th of each year.

Table 26. WQBELs for Outfalls 004 – 008

Parameter	Units	Average Monthly Limitation (AML)	Maximum Daily Limitation (MDL)	Basis for WQBEL Calculations
Oil & Grease	mg/L	NA	10	Water Quality Standard
pH	s.u.	Within the range of 6.5 – 8.5 at all times		Water Quality Standard

Footnotes:
NA = Not Applicable

The final WQBELs must be compared to the TBELs calculated for the same parameter to determine the most protective limitations that meet the requirements of both technology-based standards and water-quality based standards, including nondegradation criteria where applicable. After determining the most protective of the calculated limitations, DEQ considers the need for an anti-backsliding analysis before determining the final effluent limitations included in the MPDES permit (see Section 2.3 below)

2.2.10 WET Limitations

Based on the RPA for WET discussed in Section 2.2.8 above, the permit will not contain any numeric WET effluent limits. Additionally, the previous permits for the facility included narrative prohibitions on acute toxicity. These limits were established without determining RP and will be removed in this permit. Finally, this permit establishes a monitoring requirement for two species chronic WET testing based on the design characteristics of the discharge.

2.3 Final Effluent Limitations

The final effluent limitations in the permit are based on the more stringent of the calculated TBELs and WQBELs for each parameter subject to an anti-backsliding analysis. The more stringent limitations will attain both the technology-based and water quality-based standards.

Additionally, this permit establishes for Outfalls 001-003 (as appropriate) new effluent limits based on the Authorization to Degrade for the parameters TDS, Total Ammonia (as N), Nitrate + Nitrite (as N); effluent limits based on the TBEL for TSS; and effluent limits based on the nutrient standards for Total Nitrogen (as N).

Finally, this permit also establishes a WLA for TSS for the entire facility based on a completed TMDL.

2.3.1 Anti-backsliding Analysis

Section 402(o) of the CWA and 40 CFR 122.44(l) require, with some exceptions, that effluent limitations or conditions in reissued permits be at least as stringent as those in the existing permit. The effluent limitations in this issuance of the permit are at least as stringent as the effluent limitations in the 2006-issued permit, with the exception of effluent limitations for mercury and cadmium.

The effluent limitations for mercury and cadmium are based on Montana's water quality standards. The WQBELs for these parameters are less stringent than those found in the previous permits. The relaxation of these effluent limitations are consistent with the anti-backsliding requirements of the CWA and federal regulations; the basis for this relaxation is an adjustment of a WQBEL using updated water quality standards along with additional ambient data characterizing the receiving water that was not available and/or evaluated at the time of issuance for the previous permits. Specifically for mercury, the previous issuances of the permit lacked the appropriate data to determine effluent limits; effluent limits were determine by applying the aquatic life chronic water quality standard as the AML and 1.5 times the chronic aquatic life water quality standard as the MDL. This permit updates effluent limits for mercury based on the human health water quality standard and for cadmium based on the aquatic life water quality standards.

Finally, this permit removes the Annual Average Load limits of the previous permits. These types of limitations are not appropriate for this facility as they were incorrectly applied to an existing facility.

2.3.2 Stringency Analysis

The permit contains both technology-based and water quality-based numeric effluent limitations for individual pollutants. This permit's technology-based pollutant restrictions implement the

minimum, applicable federal technology-based requirements. In addition, this permit also contains effluent limitations more stringent than the minimum, federal technology-based requirements that are necessary to meet Montana's water quality standards.

Specifically for cadmium and mercury at Outfalls 001-003, the facility does not currently have RP to violate WQBELs for these parameters. Typically, the applicable level of control would be the applicable TBELs. However, a discharge by the facility at a level that is in compliance with the applicable TBELs would result in a violation of Montana's water quality standards for both cadmium and mercury. This requires that the WQBELs for cadmium and mercury are enacted in this permit at these outfalls; the effluent limitations for cadmium are based on the chronic aquatic life water quality standard while the effluent limits for mercury are based on the human health water quality standards. Tables 27-30 below provide a summary of the final effluent limitations for Outfalls 001-008.

Table 27. Final Numeric Effluent Limitations, Outfalls 001 – 002

Parameter	Units	Average Monthly Limitation (AML)	Maximum Daily Limitation (MDL)	Basis for Limitations
Total Suspended Solids	mg/L	20	30	Effluent Limitation Guideline
Total Dissolved Solids	mg/L	86	172	Authorization to Degrade
Total Inorganic Nitrogen, as N	mg/L	1.2	NA	Authorization to Degrade
Cadmium, Total Recoverable	µg/L	0.8	0.16	Water Quality Standard
Chromium, Total Recoverable	µg/L	4.6	9.2	Authorization to Degrade
Copper, Total Recoverable	µg/L	2.9	5.9	Authorization to Degrade
Iron, Total Recoverable	µg/L	106	212	Authorization to Degrade
Lead, Total Recoverable	µg/L	0.44	0.89	Water Quality Standard
Manganese, Total Recoverable	µg/L	55	111	Authorization to Degrade
Mercury, Total Recoverable	µg/L	0.050	0.050	Water Quality Standard
Zinc, Total Recoverable	µg/L	23	46	Authorization to Degrade
Oil & Grease	mg/L	NA	10	Water Quality Standard
pH	s.u.	Within the range of 6.5 – 8.5 at all times		Water Quality Standard
Total Ammonia, as N	mg/L	1.9	3.8	Authorization to Degrade
Nitrate + Nitrite, as N	mg/L	7.0	14.1	Authorization to Degrade
Total Nitrogen, as N	lbs/day	93.1[(1)]	NA	Nutrient Variance

Footnotes:
NA = Not Applicable
1. Limits effective July 1st through September 30th of each year.

Table 28. Final Numeric Effluent Limitations, Outfall 003

Parameter	Units	Average Monthly Limitation (AML)	Maximum Daily Limitation (MDL)	Basis for Limitations
Total Suspended Solids	mg/L	20	30	Effluent Limitation Guideline
Total Dissolved Solids	mg/L	85	170	Authorization to Degrade
Total Inorganic Nitrogen, as N	mg/L	1.1	NA	Authorization to Degrade
Cadmium, Total Recoverable	µg/L	0.8	0.16	Water Quality Standard
Chromium, Total Recoverable	µg/L	4.4	8.9	Authorization to Degrade
Copper, Total Recoverable	µg/L	2.8	5.6	Authorization to Degrade
Iron, Total Recoverable	µg/L	100	200	Authorization to Degrade
Lead, Total Recoverable	µg/L	0.44	0.89	Water Quality Standard
Manganese, Total Recoverable	µg/L	52	103	Authorization to Degrade
Mercury, Total Recoverable	µg/L	0.050	0.050	Water Quality Standard
Zinc, Total Recoverable	µg/L	22	45	Authorization to Degrade
Oil & Grease	mg/L	NA	10	Water Quality Standard
pH	s.u.	Within the range of 6.5 – 8.5 at all times		Water Quality Standard
Total Ammonia, as N	mg/L	1.7	3.5	Authorization to Degrade
Nitrate + Nitrite, as N	mg/L	6.4	12.8	Authorization to Degrade
Total Nitrogen, as N	lbs/day	93.1[(1)]	NA	Nutrient Variance

Footnotes:
NA = Not Applicable
1. Limits effective July 1st through September 30th of each year.

Table 29. Final Numeric Effluent Limitations, Outfalls 004 – 008

Parameter	Units	Average Monthly Limitation (AML)	Maximum Daily Limitation (MDL)	Basis for Limitations
Oil & Grease	mg/L	NA	10	Water Quality Standard
pH	s.u.	Within the range of 6.5 – 8.5 at all times		Water Quality Standard

Footnotes:
NA = Not Applicable

Table 30. Final Numeric Effluent Limitations, Sum of Outfalls 001 – 008

Parameter	Units[(1)]	Annual Maximum[(2)]	Basis for Limitations
Total Suspended Solids	tons/year	24	TMDL

Footnotes:
1. Sum of all daily discharges from the facility, converted into tons/year.
2. For the calendar year.

2.3.3 Additional Effluent Limitations and Conditions

The permittee is required to comply with the additional effluent limitations and conditions described below.

ALTERNATIVE TBELS, PRECIPITATION – OUTFALLS 001-003

If the permittee documents and demonstrates that a discharge occurs as a result of the conditions outlined in 40 CFR 440.104(b)(2)(i) and 40 CFR 440.131(c) then the discharge of a volume of water equal to the difference between annual precipitation falling on the treatment facility and the drainage area contributing surface runoff to the treatment facility and annual evaporation may be discharged subject to, at a minimum, the limitations summarized above in Tables 27 and 28.

ALTERNATIVE TBELS, INTERFERENCE – OUTFALLS 001-003

If the permittee documents and demonstrates the need for a discharge due to interference that meets all of the requirements under 40 CFR 440.104(b)(2)(ii) and 40 CFR 440.131(d) then a discharge of process wastewater in an amount necessary to correct the interference problem after installation of appropriate treatment may be discharged subject to, at a minimum, the effluent limitations as listed above in Tables 27 and 28.

2.3.4 Narrative Prohibitions

The general prohibitions of ARM 17.30.637(1) contain general provisions that apply to all state waters, including mixing zones, and typically are referred to as "free from" standards. These general prohibitions represent the minimum level of protection that applies to all state waters, including water quality within an authorized mixing zone and in ephemeral waters or drainage ways not subject the specific standards of ARM 17.30.621-629 and 650-658.

ARM 17.30.637(1)(d) is implemented through application of numeric standards and WET requirements, as discussed above. With few exceptions, facilities that are subject to the minimum treatment requirements and that are in compliance with those limitations fulfill the requirements of ARM 17.30.637(1)(a-c, e). However, where a discharge would cause, have the reasonable potential to cause or contribute to an excursion of a narrative standard, effluent limitations implementing that narrative standard must be included in the permit. The permit includes the following effluent limitations implementing these narrative standards:

- There shall be no discharge that settles to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines; and
- There shall be no discharge that creates floating debris, scum, a visible oil film, or globules of grease or other floating materials;

2.3.5 Other Prohibitions

The permittee is required to comply with the additional conditions as described below.

DISCHARGE PROHIBITIONS – OUTFALLS 004-008

The discharge of any process wastewater or any water resulting from mine dewatering activities at Outfalls 004-008 is prohibited.

2.4 Interim Effluent Limitations

In addition to the final effluent limitations described above, the permit contains interim effluent limitations for Outfalls 001-003 and a compliance schedule. A compliance schedule is required since this permit enacts effluent limits for some previous limited parameters that are more stringent than the 2006-issued permit limits as well as new effluent limits for other parameters. An additional discussion of the compliance schedule is included in Section 2.5 below. The period for the interim effluent limits for Outfalls 001-003 ends three (3) years from the effective date of the permit. After this period, the final effluent limits for Outfalls 001-003 as listed in Section 2.3 above are effective for the remaining term of the permit. The interim effluent limitations are summarized below in Tables 31 and 32.

Table 31. Interim Effluent Limitations, Outfalls 001 and 002

Parameter	Units	Average Monthly Limitation (AML)	Maximum Daily Limitation (MDL)	Basis for Limitation
Total Suspended Solids	mg/L	20	30	Effluent Limitation Guideline
Total Inorganic Nitrogen, as N	mg/L	2.5	NA	2006-issued Permit Limit
Cadmium, Total Recoverable	µg/L	0.8	0.16	Water Quality Standard
Chromium, Total Recoverable	µg/L	13	20	2006-issued Permit Limit
Copper, Total Recoverable	µg/L	7	10	2006-issued Permit Limit
Iron, Total Recoverable	µg/L	250	380	2006-issued Permit Limit
Lead, Total Recoverable	µg/L	0.6	0.9	2006-issued Permit Limit
Manganese, Total Recoverable	µg/L	110	150	2006-issued Permit Limit
Mercury, Total Recoverable	µg/L	0.050	0.050	Water Quality Standard
Zinc, Total Recoverable	µg/L	100	150	2006-issued Permit Limit
Oil & Grease	mg/L	NA	10	Water Quality Standard
pH	s.u.	Within the range of 6.5 – 8.5 at all times		Water Quality Standard

Footnotes:
NA = Not Applicable

Table 32. Interim Effluent Limitations, Outfall 003

Parameter	Units	Average Monthly Limitation (AML)	Maximum Daily Limitation (MDL)	Basis for Limitation
Total Suspended Solids	mg/L	20	30	2006-issued Permit Limit
Total Inorganic Nitrogen, as N	mg/L	2.2	NA	2006-issued Permit Limit
Cadmium, Total Recoverable	µg/L	0.8	16	Water Quality Standard
Chromium, Total Recoverable	µg/L	11	16	2006-issued Permit Limit
Copper, Total Recoverable	µg/L	6	9	2006-issued Permit Limit
Iron, Total Recoverable	µg/L	220	330	2006-issued Permit Limit
Lead, Total Recoverable	µg/L	0.6	0.9	2006-issued Permit Limit
Manganese, Total Recoverable	µg/L	90	140	2006-issued Permit Limit
Mercury, Total Recoverable	µg/L	0.050	0.050	Water Quality Standard
Zinc, Total Recoverable	µg/L	57	86	2006-issued Permit Limit
Oil & Grease	mg/L	NA	10	Water Quality Standard
pH	s.u.	Within the range of 6.5 – 8.5 at all times		Water Quality Standard

Footnotes:
NA = Not Applicable

2.5 Compliance Schedules

The MPDES regulations at ARM 17.30.1350 allow permit writers to establish schedules of compliance to give permittees additional time to achieve compliance with the WQA and the CWA when such time is necessary. Schedules developed under this provision must require compliance by the permittee "as soon as possible," and may not extend the date for final compliance beyond compliance dates established by the WQA or CWA. Compliance schedules that exceed one year from the date of permit issuance must set forth interim requirements and the dates for their achievement. In most cases, DEQ recommends that a permit containing a compliance schedule for final effluent limitations also include interim effluent limitations that apply prior to the final effluent limitations compliance deadline. Unless otherwise noted, the permit includes both an interim effluent limitation (see Section 2.4 above) and a compliance schedule (see Table 33 below) for the following parameters:

- Total Dissolved Solids (compliance schedule only);
- Total Inorganic Nitrogen;
- Chromium;
- Copper;
- Iron;
- Manganese;
- Zinc;
- Lead;
- Total Ammonia (compliance schedule only); and
- Total Nitrogen (compliance schedule only).

The compliance schedule also includes actions and report submissions for requirements other than effluent limits; see Sections 3 and 4 of this fact sheet for further discussion. Consistent with ARM 17.30.1350, the compliance schedule in the permit requires compliance as soon as possible, and each compliance schedule that exceeds one year in length includes an enforceable sequence of events and interim milestones specified in the permit including, where appropriate, interim effluent limitations. Table 33 contains a summary of the compliance schedules provided in the permit.

Table 33. Compliance Schedule

Action	Frequency	Action Scheduled Completion Date(1)	Report Due Date(2)
Complete a Facility Optimization Study	Single Event	No Later than Two Years from the Effective Date of the Permit	NA
Submit Notification that the Facility Optimization Study is Complete	Single Event	No Later than Two Years from the Effective Date of the Permit	The 28th of the Following Month Two Years from the Effective Date of the Permit
Submit a Storm Water Pollution Prevention Plan	Single Event	No Later than Sixty Days from the Effective Date of the Permit	The 28th of the Following Month Sixty Days from the Effective Date of the Permit
Submit a report documenting any action(s) taken to meet the final effluent limits	1/Year	By December 31st of the years 2016, 2017, and 2018	Due on or before January 28th of the years 2017, 2018, and 2018

Footnotes:
NA = Not Applicable
(1) The actions must be completed on or before the scheduled completion dates.
(2) This notification must be postmarked or electronically submitted to DEQ on or before the scheduled due date.

3 RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Regulations requiring the establishment of monitoring and reporting conditions in MPDES permits are found at ARM 17.30.1351 and at 40 CFR 122.44(i) and 122.48. In addition to the specific monitoring requirements presented in this section, the permit contains as standard conditions, monitoring and records requirements.

The effluent must be measured and sampled prior to dilution with any receiving waters for compliance with the effluent limitations given in the discharge permit. Except for parameters measured on an instantaneous basis, all monitoring requirements, including flow, are based on a daily discharge. Daily discharge, as defined in ARM 17.30.1304, means the discharge of pollutants measured during a calendar day or any 24 hour period that is reasonably representative of a calendar day. For pollutants with limitation expressed in terms of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day by multiplying the concentration of a sample by the daily flow. For pollutants with effluent limitations expressed in other units of measurement, the daily discharge is calculated as the average measurement of the pollutant over the day.

ARM 17.30.1351 (40 CFR 122.48) requires that monitoring requirements in MPDES permits must specify the monitoring type, interval, and frequency that is sufficient to yield data representative of the monitored activity, including, when appropriate, continuous monitoring. All effluent and ambient monitoring must conducted in accordance with test procedures approved under 40 CFR 136 unless another method is specified in 40 CFR Subchapters N or O. Analytical methods must achieve the required reporting value (RRV) listed in Department Circular DEQ-7 unless otherwise specified in the permit. The permittee may use any approved analytical method capable of achieving the RRV or the level of accuracy specified in the permit. All permit effluent limitations must be expressed in terms of total recoverable metal unless the conditions of ARM 17.30.1345(5) are satisfied.

Except storm water, continuous flow monitoring and totalizing is required when permit effluent limitations are expressed in terms of mass (load). Facilities must report flow gallons per minute (GPM or gallons per day (gpd). Any discharge or increase in volume of a discharge caused by precipitation must comply with the storm water monitoring requirements in Section 3.1.1, below.

3.1 Monitoring

Effluent monitoring locations, sampling frequencies, and reporting requirements for the facility are provided below in Tables 34 and 35.

Table 34. Annual Reporting Requirements, Outfalls 001-008

Parameter	Monitoring Location(s)	Units	Sample Type[(1)]	Minimum Sampling Frequency	Reporting Requirements[(1)(2)]	Reporting Frequency	Reporting Level
Total Suspended Solids (TSS)	All permitted outfalls	tons/year	Calculated	1/Year	Annual Maximum	Annually	1

Footnotes:
1. See definitions in Part V of the permit.
2 Load calculation: the sum of all individual daily average loads (in lbs/day) for each calendar day from all outfalls recorded during the entire calendar year, converted to tons/year.

Table 35. Effluent Monitoring and Reporting Requirements, Outfalls 001-003

Parameter	Monitoring Location(s)	Units	Sample Type[1]	Minimum Sampling Frequency	Reporting Requirements[1][2][3]	Reporting Frequency	Reporting Level
Flow Rate	Effluent Flow Meter[4]	gpm	Instantaneous	1/Week	Maximum Daily and Average Monthly	Monthly	± 10% of actual flow
Total Suspended Solids (TSS)	Effluent	mg/L lbs/day[5]	Composite Calculated	1/Week	Maximum Daily and Average Monthly	Monthly	4
Total Dissolved Solids (TDS)	Effluent	mg/L	Composite	1/Week	Maximum Daily and Average Monthly	Monthly	4
pH	Effluent	s.u.	Instantaneous	1/Week	Daily Maximum and Daily Minimum	Monthly	0.1
Temperature	Effluent	°F	Instantaneous	1/Week	Daily Maximum and Daily Minimum	Monthly	0.1
Oil & Grease[6]	Effluent	mg/L	Grab	1/Week	Maximum Daily and Average Monthly	Monthly	5
Nitrate + Nitrite (as N)	Effluent	mg/L	Composite	1/Week	Maximum Daily and Average Monthly	Monthly	0.02
Total Ammonia (as N)	Effluent	mg/L	Composite	1/Week	Maximum Daily and Average Monthly	Monthly	0.07
Total Kjeldahl Nitrogen (as N)	Effluent	mg/L	Composite	1/Week	Maximum Daily and Average Monthly	Monthly	0.15
Total Inorganic Nitrogen (as N)[7]	Effluent	mg/L lbs/day[5]	Calculated	1/Week	Maximum Daily and Average Monthly	Monthly	0.01
Total Nitrogen (as N)[8]	Effluent	mg/L lbs/day[5]	Calculated	1/Week	Maximum Daily and Average Monthly	Monthly	0.01
Total Phosphorus (as P)	Effluent	mg/L lbs/day[5]	Composite Calculated	1/Week	Maximum Daily and Average Monthly	Monthly	0.001
Aluminum, Dissolved	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	9
Antimony, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	0.5
Arsenic, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	1
Beryllium, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	0.8
Cadmium, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	0.03
Chromium, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	5
Copper, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	2
Iron, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	20
Lead, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	0.3
Manganese, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	50
Mercury, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	0.005
Nickel, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	2
Silver, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	0.2
Thallium, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	0.2

Table 35. Effluent Monitoring and Reporting Requirements, Outfalls 001-003

Parameter	Monitoring Location(s)	Units	Sample Type[1]	Minimum Sampling Frequency	Reporting Requirements[1][2][3]	Reporting Frequency	Reporting Level
Zinc, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	8
Whole Effluent Toxicity-Chronic, Static Renewal, Three-Brood, *Ceriodaphnia dubia*[9]	Effluent	%Effluent	Composite	1/Quarter	Pass/Fail	Quarterly	Per Method[10]
Whole Effluent Toxicity-Chronic, Static Renewal, 7-Day, *Pimephales promelas*[9]	Effluent	%Effluent	Composite	1/Quarter	Pass/Fail	Quarterly	Per Method[11]

Footnotes:
1. See definitions in Part V of the permit.
2. Maximum Daily: Report highest measured daily value for the reporting period on Discharge Monitoring Report (DMR) form.
3. If no discharge occurs during the reporting period then "No Discharge" shall be recorded on the DMR form.
4. Effluent flow rate must be reported for each individual outfall.
5. Load calculation: lbs/day = the average of all calculated individual daily average loads (lbs/day) recorded during the reporting period.
6. EPA method 1664 (hexane extraction method) or other 40 CFR 136 approved method.
7. Total Inorganic Nitrogen is the sum of the Nitrate + Nitrite and Total Ammonia parameters.
8. Total Nitrogen is the sum of the Nitrate + Nitrite and Total Kjeldahl Nitrogen parameters.
9. A WET sample collected at the distribution box is considered representative of Outfalls 001 and 002. The WET sampling location for Outfall 003 is at the end-of-pipe discharge into Libby Creek. WET tests for Outfall 003 are required when there is any discharge from Outfall 003 during a reporting period.
10. EPA method 1002.0.
11. EPA method 1000.0.

3.1.1 Storm Water Monitoring Requirements

Storm water monitoring is required for Outfalls 004-008. A storm water discharge is any discharge or increase in the volume of a discharge as a result of precipitation or snow melt runoff. Storm water monitoring must be performed for any event that results in a discharge. In the case of snow melt, the monitoring must be performed at a time when a measurable discharge occurs from the site. At a minimum, the permittee must collect a sample within the first 30 minutes of discharge at a permitted outfall.

Grab samples must be collected within the first 30 minutes of the storm water discharge. Unless a grab sample is specified, a flow weighted composite sample must be taken for either the entire discharge or for the first three hours of the discharge. The flow weighted composite sample for a storm water discharge may be taken with a continuous sampler or as a combination of a minimum of three aliquots (with each aliquot separated by a minimum period of 15 minutes) taken in each hour of the discharge over the course of either the entire discharge or over the first three hours of the discharge. Aliquots may be collected manually or automatically. For a flow weighted composite sample, only one analysis of the composite of the aliquots is required. Flow weighted composite samples are not allowed for pH, total phenols, and oil and grease. The permittee may substitute a grab sample for a flow weighted composite sample provided that the grab sample is collected within the first 30 minutes of the discharge.

In addition to the collection and analysis of a storm water sample for an event, the permittee must provide flow information for the storm event sampled and precipitation data for the event that generated the discharge. The permittee must collect and report the total volume of the discharge and maximum flow rate (in gallons per minute) for the discharge event sampled. These parameters may be measured or estimated. If these values are estimated, the estimated values must follow those methods

given in *Guidance Manual for the Preparation of NPDES Permit Application for Storm Water Discharges Associated with Industrial Activity* (EPA 505/8-91-002, April 1991) unless otherwise specified.

The permittee must record the data and duration (in hours) of the storm event sampled, rainfall measurements or estimates, and the duration between the storm event sampled and the previous measurable storm event. A measurable storm event is any rainfall event that is greater than 0.1 inch. This information is not required to be reported on the DMR form but is subject to the record keeping and retention requirements of this permit. Storm water monitoring locations, sampling frequencies, and reporting requirements for the facility are provided below in Table 36.

Table 36. Storm Water Monitoring Requirements, Outfalls 004-008

Parameter	Monitoring Location(s)	Units	Sample Type[1]	Minimum Sampling Frequency	Reporting Requirements[1][2][3]	Reporting Frequency	Reporting Level
Precipitation	Rain Gage	inches	Continuous	1/Discharge	Daily Total	Monthly	0.01
Flow Rate	Effluent Flow Meter[4]	gpm	Continuous	1/Discharge	Maximum Daily and Average Monthly	Monthly	± 10% of actual flow
Chemical Oxygen Demand (COD)	Each Outfall	mg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	1
Total Suspended Solids (TSS)	Each Outfall	mg/L lbs/day[5]	Composite Calculated	1/Discharge	Maximum Daily and Average Monthly	Monthly	4
Total Dissolved Solids (TDS)	Each Outfall	mg/L	Composite	1/Discharge	Maximum Daily and Average Monthly	Monthly	4
pH	Each Outfall	s.u.	Instantaneous	1/Discharge	Daily Maximum and Daily Minimum	Monthly	0.1
Oil & Grease[6]	Each Outfall	mg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	5
Nitrate + Nitrite (as N)	Each Outfall	mg/L	Composite	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.02
Total Ammonia (as N)	Each Outfall	mg/L	Composite	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.07
Total Kjeldahl Nitrogen (as N)	Each Outfall	mg/L	Composite	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.15
Total Inorganic Nitrogen (as N)[7]	Each Outfall	mg/L lbs/day[5]	Calculated	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.01
Total Nitrogen (as N)[8]	Each Outfall	mg/L lbs/day[5]	Calculated	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.01
Total Phosphorus (as P)	Each Outfall	mg/L lbs/day[5]	Composite Calculated	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.001
Aluminum, Dissolved	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	9
Antimony, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.5
Arsenic, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	1
Beryllium, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.8
Cadmium, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.03
Chromium, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	5
Copper, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	2

Table 36. Storm Water Monitoring Requirements, Outfalls 004-008

Parameter	Monitoring Location(s)	Units	Sample Type[1]	Minimum Sampling Frequency	Reporting Requirements[1][2][3]	Reporting Frequency	Reporting Level
Iron, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	20
Lead, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.3
Manganese, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	50
Mercury, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.005
Nickel, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	2
Silver, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.2
Thallium, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.2
Zinc, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	8

Footnotes:
1. See definitions in Part V of the permit.
2. Maximum Daily: Report highest measured daily value for the reporting period on Discharge Monitoring Report (DMR) form.
3. If no discharge occurs during the reporting period then "No Discharge" shall be recorded on the DMR form.
4. Effluent flow rate must be reported for each individual outfall
5. Load calculation: lbs/day = the average of all calculated individual daily average loads (lbs/day) recorded during the reporting period.
6. EPA method 1664 (hexane extraction method) or other 40 CFR 136 approved method.
7. Total Inorganic Nitrogen is the sum of the Nitrate + Nitrite and Total Ammonia parameters.
8. Total Nitrogen is the sum of the Nitrate + Nitrite and Total Kjeldahl Nitrogen parameters.

3.1.2 Whole Effluent Toxicity Testing

When requiring chronic WET tests, DEQ must first determine the effluent concentration in the receiving water, after accounting for any available dilution. This concentration is referred to as the Receiving Water Concentration (RWC). The RWC is then used as the limiting endpoint, or critical dilution, in the WET test. The RWC is calculated by adding the two mixing components (the available dilution from the receiving water 7Q10, or 1.9 cfs, and the facility's average daily design flow, or 1.1 cfs) and determining what percentage the design flow is of the total downstream flow. For the facility, the DEQ has determined that the RWC is 37% (i.e. 1.1/(1.9 + 1.1)). For the discharge from the facility, chronic toxicity occurs in a WET test when the 25% inhibition concentration (IC_{25}) for any test species is less than or equal to 37% effluent. Each chronic WET test will consist of the following concentrations: control, 9%, 19%, 37%, 69%, and 100% effluent.

The permittee is required to conduct a chronic static renewal toxicity test on a composite sample of the effluent on a quarterly frequency. Testing will employ two species per quarter and will consist of 5 effluent concentrations (9, 19, 37, 69, and 100 percent effluent) and a control. Dilution water and the control shall consist of the receiving water and must be collected upstream of the discharge. A minimum of three effluent samples are required for chronic toxicity tests. These samples must be collected on days 1, 3, and 5, and be shipped to the testing laboratory. The first sample is used for test initiation and for renewal on test day 2. The second sample is used for test renewal on test days 3 and 4. The third sample is used for renewal on test days 5, 6, and 7.

The static renewal toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of *Short Term Methods for Estimating the Chronic Toxicity of Effluent and*

Receiving Waters to Freshwater Organisms, EPA-821-R-02-013 (October 2002) and the "*Region VIII NPDES Whole Effluent Toxics Control Program* (August 1997). The permittee shall conduct a three-brood (seven day) survival and reproduction static renewal toxicity test using *Ceriodaphnia dubia* (test method 1002.0) and a seven-day growth and survival static renewal toxicity test using *Pimephales promelas* (test method 1000.0). The control of pH in the toxicity test utilizing CO_2 enriched atmospheres is allowed to prevent rising pH drift. The target pH selected must represent the pH value of the receiving water at the time of sample collection. The use of CO_2 to control pH drift must be in accordance with the requirements of sections 12.3.5, 12.3.5.1 through 4, and 12.3.5.2, and all other test requirements, in the chronic methods manual (EPA-821-R-02-013).

Chronic toxicity occurs when the inhibition concentration to 25% of the test population (IC_{25}) is less than or equal to the 37% effluent concentration. Control survival and growth or reproduction must meet the requirements specified in the method.

If chronic toxicity occurs in a routine test, an additional test must be conducted within 14 days of the date of the initial sample. Should chronic toxicity occur in the second test, the frequency of WET testing increases to monthly and a TIE/TRE must be initiated. In all cases, the results of all toxicity tests must be submitted to DEQ in accordance the permit.

3.2 Reporting Requirements

The permittee must comply with reporting requirements as specified in ARM 17.30.1342.

4 RATIONALE FOR SPECIAL CONDITIONS

The following provides the rationale for the special conditions included in the permit.

4.1 Additional Monitoring and Special Studies

Due to the type of permitted facility and the nature of the proposed discharges from the facility, this permit requires the permittee to perform additional monitoring as outlined in the following sections.

Metal mobility tests from the Troy mine, together with *in situ* monitoring, indicate a potential for a release of low levels of aluminum, antimony, copper, iron, lead, manganese, silver, and thallium from the ore zone where it would be exposed underground (see EIS). Accordingly, this permit will require monitoring of the effluent at Outfalls 001-003 (see Section 3.1 above) and ambient receiving water (see Section 4.1.1 below) for these parameters.

4.1.1 Ambient Monitoring

The permittee is required to monitor the ambient conditions in Libby Creek upstream of the discharge at monitoring station 150LB-200. Monitoring for parameters (other than temperature) is required quarterly to capture high- and low-flow events in Libby Creek.

The permittee must also monitor upstream and downstream temperature in Libby Creek at monitoring stations 150LB-200 and 150LB-300 respectively. These monitoring events must be synoptic (i.e. temperature measurements at each monitoring location are taken on the same day). The temperature difference (ΔT) is determined by subtracting the downstream average daily temperature (T_D) from the upstream average daily temperature (T_U). The ambient monitoring and reporting requirements for Libby Creek are summarized in Table 37.

Table 37. Monitoring and Reporting Requirements, Libby Creek

Parameter	Monitoring Location	Units	Sample Type[(1)]	Minimum Sampling Frequency	Reporting Requirements[(1)]	Reporting Frequency	Reporting Level
Total Suspended Solids (TSS)	150LB-200	mg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	4
Total Dissolved Solids (TDS)	150LB-200	mg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	4
pH	150LB-200	s.u.	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.1
Hardness (as $CaCO_3$)	150LB-200	mg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	5
Oil & Grease[(2)]	150LB-200	mg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	5
T_u	150LB-200	°F	Instantaneous	1/Week	Average Daily	Monthly	0.1
T_d	150LB-300	°F	Instantaneous	1/Week	Average Daily	Monthly	0.1
ΔT	NA	°F	Calculated	1/Week	Temperature Difference	Monthly	0.1
Nitrate + Nitrite (as N)	150LB-200	mg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.02

Table 37. Monitoring and Reporting Requirements, Libby Creek

Parameter	Monitoring Location	Units	Sample Type[1]	Minimum Sampling Frequency	Reporting Requirements[1]	Reporting Frequency	Reporting Level
Total Ammonia (as N)	150LB-200	mg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.07
Total Kjeldahl Nitrogen (as N)	150LB-200	mg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.15
Total Inorganic Nitrogen (as N)	150LB-200	mg/L	Calculated[3]	1/Quarter	Quarterly Maximum	Quarterly	0.01
Total Nitrogen (as N)	150LB-200	mg/L	Calculated[4]	1/Quarter	Quarterly Maximum	Quarterly	0.01
Total Phosphorus (as P)	150LB-200	mg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.001
Aluminum, Dissolved	150LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	9
Antimony, Total Recoverable	150LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.5
Arsenic, Total Recoverable	150LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	1
Beryllium, Total Recoverable	150LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.8
Cadmium, Total Recoverable	150LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.03
Chromium, Total Recoverable	150LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	5
Copper, Total Recoverable	150LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	2
Iron, Total Recoverable	150LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	20
Lead, Total Recoverable	150LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.3
Manganese, Total Recoverable	150LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	50
Mercury, Total Recoverable	150LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.005
Nickel, Total Recoverable	150LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	2
Silver, Total Recoverable	150LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.2
Thallium, Total Recoverable	150LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.2
Zinc, Total Recoverable	150LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	8

Footnotes:
1. See definitions in Part V of the permit.
2. EPA method 1664 (hexane extraction method) or other 40 CFR 136 approved method.
3. Total Inorganic Nitrogen is the sum of the Nitrate + Nitrite and Total Ammonia parameters.
4. Total Nitrogen is the sum of the Nitrate + Nitrite and Total Kjeldahl Nitrogen parameters.

4.1.2 Supplemental Effluent Monitoring

The permittee is required to monitor and report precipitation for the facility's drainage basins using a precipitation gauge that meets the standards in National Weather Service's *Instrument Requirements and Standards for the NWS Surface Observing Programs (Land)* (Instructional Bulletin 10-1302, October 4, 2005) summarized below in Table 38. Precipitation monitoring is required to provide evidence for the alternative TBELs for Outfalls 001-003 as well as to determine permit compliance.

Table 38. Precipitation Gauge Performance Standards

Parameter	Accuracy	Range	Resolution
Liquid Precipitation Accumulated Amount	±0.02 inches or 4% of hourly amount (whichever is greater)	0-10 inches/hour	0.01 inch
Snow Depth	0 to 5 inches: ±0.5 inches; >5 to 99 inches: ±1.0 inch	0 to 99 inches (auto)	1 inch
Freezing Precipitation	Detection occurs whenever 0.01 inch accumulates	0 to 40 inches	0.01 inch
Frozen precipitation (water equivalent)	±0.04 inches or 1% of total accumulation	0 to 40 inches	0.01 inch

4.1.3 Ground Water Monitoring – Not Applicable

4.2 Best Management Practices and Pollution Prevention

The NPDES regulations at 40 CFR 122.44(k) (incorporated by reference in ARM 17.30.1344(2)(b)) state that BMPs may be included as permit conditions when:

- Authorized under Section 304(e) of the CWA for the control of toxic pollutants and hazardous substances from ancillary industrial activities;
- Authorized under Section 402(p) of the CWA for the control of storm water discharges;
- Numeric effluent limitations are infeasible; or
- The practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

DEQ is establishing BMPs for the facility as a special condition in this permit.

4.2.1 BMPs

A number of sites and activities found at metal mining facilities require the implementation of BMPs to prevent the contamination of storm water. Implementation of BMPs are required not only for mineral extraction sites and material piles, but for discharges from roads accessing these sites. BMPs must be selected and implemented that address, at a minimum the following areas:

- Good Housekeeping Practices;
- Minimizing Exposure;
- Erosion and Sediment Control; and
- Management of Runoff and Run-on.

An overview of the BMPs that may be applicable to the facility (haul or access roads; pits or quarries; overburden, waste rock, and raw material piles; and reclamation activities) is discussed below. These BMPs are adapted from EPA's *Industrial Stormwater Fact Sheet, Sector G: Metal Mining (Ore Mining and Dressing) Facilities* (EPA-833-F-06-022, December 2006) and should be referenced and incorporated by the permittee into the facility's storm water pollution prevention plan (SWPPP/) applicable or necessary (see Section 4.2.3 of this fact sheet).

EPA has identified a wide variety of BMPs to mitigate discharges of contaminants at mines. These controls to prevent erosion and control sedimentation are the most effective if they are installed at the

inception of operations and maintained throughout active operations and reclamation of the site. The following categories describe some of the BMP options available for reducing pollutants in storm water discharges at metal mining facilities:

Discharge Diversions

Discharge diversions provide the first line of defense in preventing the contamination of discharges, and subsequent contamination of receiving waters. Discharge diversions are temporary or permanent structures installed to divert flow, store flow, or limit storm water run-on and runoff. Diversion dikes, curbs, and berms are temporary or permanent diversion structures that prevent runoff from passing beyond a certain point, and divert runoff away from its intended path. Dikes, curbs or berms may be used to surround and isolate areas of concern, diverting flow around piles of overburden, waste rock, and storage areas, to minimize discharge contact with contaminated materials and to limit discharges of contaminated water from confined areas.

Drainage/Storm Water Conveyance Systems

Drainage or storm water conveyance systems can provide either a temporary or a permanent management practice which functions to channel water away from eroded or unstabilized areas, convey runoff without causing erosion, and/or carry discharges to more stabilized areas. The use of drainage systems as a permanent measure may be most appropriate in areas with extreme slopes, areas subject to high velocity runoff, and other areas where the establishment of substantial vegetation is infeasible or impractical. Some examples of drainage/storm water conveyance systems include: channels or gutters; open top box culverts and waterbars; rolling dips and road sloping; roadway surface water deflector; and culverts. Drainage and conveyance systems should be inspected periodically for blockages and erosion. Erosion and/or sedimentation that compromise the ability of these structures to convey storm water should be addressed. Where blockage or erosion occurs, more frequent maintenance of these structures may be required.

Runoff Dispersion

Drainage systems are most effective when used in conjunction with runoff dispersion devises designed to slow the flow of water discharged from a site. These devices also aid storm water infiltration into the soil and flow attenuation. Some examples of velocity dissipation devices include: check dams; rock outlet protection; level spreaders; serrated slopes and benched slopes; contouring; and drop structures.

Sediment Control and Collection

Erosion and sediment controls limit movement and retains sediments, preventing transportation offsite. Several structural collection devices have been developed to remove sediment from runoff before it leaves the site. Several methods of removing sediment from site runoff involve diversion mechanisms previously discussed, supplemented by a trapping or storage device. Structural practices typically involve filtering diffuse storm water flows through temporary structures such as straw bale dikes, silt fences, brush barriers or vegetated areas. Structural practices are typically low in cost. However, structural practices require periodic removal of sediment to remain functional. Several examples of sediment control and collection BMPs include: gabions, riprap, and native rock retaining walls; biotechnical stabilization; straw bale barrier; vegetated buffer strips; silt fence/filter fence; siltation berms; brush sediment barriers; sediment traps or catch basins; and sediment/settling ponds. Sediment ponds or traps located at final discharge points are designed to detain runoff from a 10-year, 24-hour precipitation event during active mining operations.

Vegetation Practices

Vegetation practices involve establishing a sustainable ground cover by permanent seeding, mulching, sodding, and other such practices. A vegetative cover reduces the potential for erosion of a site by: absorbing the kinetic energy of raindrops which would otherwise impact soil; intercepting water so it can infiltrate into the ground instead of running off and carrying contaminated discharges; and by slowing the velocity of runoff to promote on-site deposition of sediment. These practices include: topsoiling; broadcast seeding and drill seeding; willow cutting establishment; plastic matting, plastic netting and erosion control blankets; mulch-straw or wood chips; and compaction. Given the limited capacity to accept large volumes of runoff, and potential erosion problems associated with large concentrated flows, vegetative controls should typically be used in combination with other management practices. Reclaimed vegetative cover must be similar to pre-mining vegetative cover. Permanent vegetation cover appropriate for the site typically is established by the end of the third growing season following initial seeding, although the reclaimed plant community will continue to develop. From a hydrologic perspective the objective is 75 percent cover, including litter, which defines "good" hydrologic condition for runoff and sediment modeling purposes.

Capping

Capping or sealing of waste materials is designed to prevent infiltration, as well as to limit contact between discharges and potential sources of contamination. Ultimately, capping should reduce or eliminate the contaminants in discharges. In addition, by reducing infiltration, the potential for seepage and leachate generation may also be lessened.

Treatment

In some cases (e.g., low pH and/or high metals concentrations), BMPs, and sediment and erosion controls may not be adequate to produce an acceptable quality of storm water discharge. Under those circumstances additional physical or chemical treatment systems may be necessary to protect the receiving waters. Treatment practices are those methods of control which normally are thought of as being applied at the “end of the pipe” to reduce the concentration of pollutants in storm water before it is discharged. This is in contrast to many BMPs, where the emphasis is on keeping the water from becoming contaminated. Treatment practices may be required where flows are currently being affected by exposed materials and other BMPs are insufficient to meet discharge goals. These practices are usually the most resource intensive as they often require significant construction costs and monitoring and maintenance on a frequent and regular basis.

Haul Roads and/or Access Roads

Placement of haul roads or access roads should occur as far as possible from natural drainage areas, lakes, ponds, wetlands, or floodplains where soil will naturally be less stable for heavy vehicle traffic. If a haul road must be constructed near water, as little vegetation as possible should be removed from between the road and the waterway, as vegetation is a useful buffer against erosion and is an efficient sediment collection mechanism. The width and grade of haul or access roads should be minimal and designed to match natural contours of the area. Construction of haul roads should be supplemented by BMPs that divert runoff from road surfaces, minimize erosion, and direct flow to appropriate channels for discharge to treatment areas or other well-stabilized areas.

Equipment/Vehicle Fueling and Maintenance

Fueling and maintenance activities should be conducted indoors or under cover on an impermeable surface. Berms, curbs, or similar means should be used to ensure that storm water runoff from other

parts of the facility does not flow over maintenance and fueling areas. Runoff from fueling and maintenance areas should be collected and treated or recycled. Proper waste management and spill prevention and response procedures should be implemented. Select good housekeeping procedures to minimize the amount of contaminated runoff generated (e.g. use dry cleanup methods, use drip pans, and drain parts of fluids before disposal). Conduct inspections of fueling areas to prevent problems before they occur.

Overburden, Waste Rock, and Raw Material Piles

Overburden, topsoil, and waste rock, as well as raw material and intermediate and final product stockpiles, should be located away from surface waters, other sources of water and from geologically unstable areas. In addition surface waters and storm water should be diverted around the piles. As many piles as possible should be revegetated, (even if only on a temporary basis). At closure, remaining piles should be reclaimed.

Reclamation Activities

When a mineral deposit is depleted and operations cease, a mine site must be reclaimed according to appropriate state or federal standards. Closure activities typically include restabilization of disturbed areas such as access or haul roads, pits or quarries, sedimentation ponds or work-out pits, and remaining waste piles. Overburden and topsoil stockpiles may be used to fill in a pit or quarry (where practical). Recontouring and revegetation should be performed to stabilize soils and prevent erosion. Major reclamation activities such as recontouring roads and filling in a pit or quarry can only be performed after operations have ceased. However, reclamation activities such as stabilization of banks, reseeding, and revegetation should be implemented in mined out portions, or inactive areas of a site as active mining moves to new areas.

A combination of preventive and treatment BMPs will yield the most effective storm water management for minimizing the discharge of pollutants via storm water runoff. BMPs must also address preventive maintenance records or logbooks, regular facility inspections, spill prevention and response, and employee training. All BMPs require regular maintenance to function as intended. Some management measures have simple maintenance requirements, others are quite involved. BMPs must regularly inspected to ensure they are operating properly, including during runoff events. As soon as a problem is found, action to resolve it should be initiated immediately.

The categories discussed above are not an exhaustive list of BMPs. The permittee may identify and implement any additional BMPs that minimize and/or eliminate the generation of pollutants and the potential discharge of pollutants into state waters through normal operations and ancillary activities. Additional guidance on BMPs is available in EPA's *Guidance Manual for Developing Best Management Practices* (EPA 833-B-93-004, October 1993).

4.2.2 Land Application – Not Applicable

4.2.3 Storm Water Management

The permittee must develop and maintain a Storm Water Pollution Protection Plan (SWPPP) that describes the facility, BMPs, control measures, and monitoring procedures that will ensure compliance with the terms and conditions of their MPDES permit. The BMPs implemented at the facility may be structural or non-structural in nature. The SWPPP must be submitted to DEQ no later than 60 days after the effective date of the permit. SWPPPs are intended to be maintained such that they are updated

and adjusted to reflect current conditions, activities, and any storm water issues identified at the facility. Periodic evaluation of the SWPPP and the ongoing improvements to the facility, as documented in the SWPPP, will serve to improve the quality of storm water runoff.

The SWPPP must contain a narrative evaluation of the appropriateness of storm water management practices that divert, infiltrate, reuse, or otherwise manage storm water runoff such as to reduce the discharge of pollutants. Appropriate measures are highly site-specific, but may include, among others, vegetative swales, collection and reuse of storm water, inlet controls, snow management, infiltration devices, and wet retention measures. The SWPPP must document, at minimum, the following:

Storm Water Pollution Prevention Team and SWPPP Administrator

The permittee must identify the staff members that comprise the facility's storm water pollution prevention team as well as their individual responsibilities. This team must include, and the SWPPP specify, a "SWPPP Administrator." The SWPPP Administrator is the lead responsible person for ensuring the development, implementation, and maintenance of the SWPPP. The SWPPP Administrator also serves as the primary contact person regarding the SWPPP. The facility's storm water pollution prevention team is responsible for assisting the facility manager in developing and revising the facility's SWPPP as well as maintaining control measures and taking corrective actions where required. Each member of the storm water pollution prevention team must have ready access to this permit and SWPPP.

Site Description

The SWPPP must provide a description of the nature of the industrial activities at the facility. The SWPPP must document the mining and associated activities with the potential to impact the storm water discharges covered by this permit.

Site Map

The SWPPP must include a legible map(s) of sufficient scale which clearly shows current conditions including the following:

- Map scale;
- North arrow;
- The site boundaries for the facility or activity;
- Locations of all receiving waters in the immediate vicinity of the facility;
- The location and extent of structures and impervious surfaces;
- Directions of storm water flow (use arrows);
- Locations of all existing structural storm water control measures;
- Locations of all storm water conveyances including ditches, pipes, and swales;
- Locations of all storm water outfall monitoring points;
- Locations of storm water inlets and outfalls, with a unique identification code for each outfall;
- Locations of potential pollutant sources;
- Locations where spills or leaks have occurred;
- Locations and descriptions of all non-storm water discharges;
- Locations and sources of run-on to the facility from adjacent property that contains pollutants; and
- Locations of the following activities where such activities are exposed to precipitation: fueling stations; vehicle and equipment maintenance and/or cleaning areas; loading/unloading areas; locations used for the treatment, storage, or disposal of wastes; liquid storage tanks; processing and

storage areas; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; major permanent facility structures; transfer areas for substances in bulk; and machinery.

In addition to the above items, the SWPPP must document the locations of the following (as appropriate): mining or milling site boundaries; access and haul roads; outline of the drainage areas of each storm water outfall within the facility with indications of the types of discharges from the drainage areas; location(s) of all permitted discharges covered under an individual MPDES permit, outdoor equipment storage, fueling, and maintenance areas; materials handling areas; outdoor manufacturing, outdoor storage, and material disposal areas; outdoor chemicals and explosives storage areas; overburden, materials, soils, or waste storage areas; location of mine drainage (where water leaves the mine) or other process water; tailings piles and ponds (including proposed ones); heap leach pads; off-site points of discharge for mine drainage and process water; surface waters; boundary of tributary areas that are subject to effluent limitations guidelines; and location(s) of reclaimed areas.

Summary of any Potential Pollutant Sources

The permittee must document in the SWPPP areas at the facility where industrial materials or activities are exposed to storm water and from which allowable non-storm water discharges are released. Industrial materials or activities include, but are not limited to: material handling equipment or activities; industrial machinery; raw materials; industrial production and processes; and intermediate products, byproducts, final products, and waste products. Material handling activities include, but are not limited to: the storage, loading and unloading, transportation, disposal, or conveyance of any raw material, intermediate product, final product or waste product. For each area identified, the description must include:

- A list of the industrial activities exposed to storm water (e.g., material storage; equipment fueling, maintenance, and cleaning);
- A list of the pollutant(s) or pollutant constituents (e.g. crankcase oil, zinc, sulfuric acid, and/or cleaning solvents) associated with each identified activity. The pollutant list must include materials that have been handled, treated, stored, or disposed, and that have been exposed to storm water in the 3 years prior to the date of the SWPPP; and
- Documentation of where potential spills and leaks may occur that might contribute pollutants to storm water discharges, and the corresponding outfall(s) potentially affected by such spills and leaks. The permittee must document spills and leaks of oil or toxic or hazardous pollutants that actually occurred at exposed areas or that drained to a storm water conveyance, in the 3 years prior to the date of the SWPPP.

Each facility component or system must be examined for its waste minimization opportunities and its potential for discharge to state waters due to equipment failure, improper operation, and natural phenomena. This examination must include, at a minimum, all normal operations and ancillary activities including (as appropriate) material storage areas, plant site runoff, in-plant transfer, process and material handling areas, loading or unloading operations, spillage or leaks, sludge and waste disposal, or drainage from raw material storage.

Description of Control Measures and BMPs

The permittee must document in the SWPPP the location and types of control measures installed and implemented at the facility and describe how the control measure selection and design considerations

were addressed. This documentation must describe how the control measures address both the pollutant sources identified and any storm water run-on that commingles with any discharges covered under this permit. Documentation of control measures must include design and maintenance criteria for permanent and temporary structural control measures (i.e. plans, detail drawings, cross-sections, specifications, narrative description, etc.) and an appropriate maintenance schedule. The selection, design, installation, and implementation of these control measures must be in accordance with good engineering practices and/or manufacturer's specifications, and the SWPPP should reference all source(s) used in BMP design, installation, implementation, and maintenance specifications (i.e. EPA, Montana Department of Transportation, or other BMP manuals). Note that the permittee may deviate from such manufacturer's specifications as long as the permittee provide justification any deviation and includes documentation of the rationale in the part of the SWPPP that describes control measures. In addition, any other requirements for other programs or permitting activities which would meet the SWPPP requirements may be incorporated. If the permittee finds that any control measures are not achieving their intended effect of minimizing pollutant discharges, then the permittee must modify these control measures as expeditiously as practicable.

Control measures that must be documented in the SWPPP and implemented by the permittee must, at a minimum, include:

- Good Housekeeping Procedures. Keep clean all exposed areas that are potential sources of pollutants, using such measures as sweeping at regular intervals, keeping materials orderly and labeled, and storing materials in appropriate containers.
- Maintenance. Regularly inspect, test, maintain, and repair all industrial equipment and systems to avoid situations that may result in leaks, spills, and other releases of pollutants in storm water discharged to receiving waters. All control measures that are used to achieve the effluent limits required by this permit in must be maintained in effective operating condition. Non-structural control measures must also be diligently maintained (e.g., spill response supplies available, personnel appropriately trained). If control measures need to be replaced or repaired, then the permittee must make the necessary repairs or modifications before the next storm event.
- Spill Prevention and Response Procedures. Minimize the potential for leaks, spills and other releases that may be exposed to storm water and develop plans for effective response to such spills if or when they occur. At a minimum, the SWPPP must document and the permittee must implement the following:
    - Procedures for plainly labeling containers (e.g., "Used Oil," "Spent Solvents," "Fertilizers and Pesticides," etc.) that may be susceptible to spillage or leakage to encourage proper handling and facilitate rapid response if spills or leaks occur;
    - Preventative measures such as barriers between material storage and traffic areas, secondary containment provisions, and procedures for material storage and handling;
    - Procedures for expeditiously stopping, containing, and cleaning up leaks, spills, and other releases. Employees who may cause, detect, or respond to a spill or leak must be trained in these procedures and have necessary spill response equipment available; and
    - Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies.
- Erosion and Sediment Controls. The permittee must stabilize exposed areas and contain runoff using structural and/or non-structural control measures to minimize onsite erosion and sedimentation, and the resulting discharge of pollutants. Among other actions, flow velocity dissipation devices must be placed at discharge locations and within outfall channels where

necessary to reduce erosion and/or settle out pollutants. In selecting, designing, installing, and implementing appropriate control measures, the permittee is encouraged to consult with available guidance resources relating to BMPs for erosion and sedimentation, including industrial sector-specific information.

- Management of Runoff. The permittee must divert, infiltrate, reuse, contain, or otherwise reduce storm water runoff, to minimize pollutants in any discharges. In selecting, designing, installing, and implementing appropriate control measures, the permittee is encouraged to consult with available guidance resources relating to storm water BMPs for runoff management, including industrial sector-specific information.

Additionally, the permittee must address and document the following in their SWPPP:

- The number and quantity of pollutants and the toxicity of effluent generated, discharged, or potentially discharged at the facility must be minimized by the permittee to the extent feasible by managing each influent waste stream in the most appropriate manner;
- Storm water control measures must be designed, operated, and maintained to maximize the chemical and/or physical processes that reduce or eliminate the discharge of any pollutants to state surface waters;
- Sediment ponds must be clearly staked to indicate sediment accumulation;
- The permittee must ensure proper operation and maintenance of any control and/or discharge structures;
- To the maximum extent possible, 100-foot setbacks or 35-foot vegetated buffer strips between roads and/or other impervious surfaces and any downgradient surface waters or other conduits to surface waters will be established and/or maintained;
- Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances that may result in significant amounts of pollutants reaching state waters, the SWPPP should include a prediction of the direction, rate of flow and total quantity of pollutants that could be discharged from the facility as a result of each condition or circumstance; and
- Discharges to frozen or snow-covered ground must be minimized or eliminated.

Any Schedules and/or Standard Operating Procedures

The SWPPP must document any control measure inspections, routine maintenance, and/or procedures that impact the potential generation and/or discharge of pollutants by the facility. The permittee must conduct a facility inspection once every 30 days and within 24 hours of a significant precipitation event of 0.5 inches or greater. At a minimum, the documentation of each routine facility inspection must include: the inspection date and time; the name(s) and signature(s) of the inspector(s); weather information; a description of any discharges occurring at the time of the inspection; any previously unidentified discharges of pollutants from the site; any observations of obvious indicators of storm water pollution; any control measures needing maintenance or repairs; any failed control measures that need replacement; any incidents of noncompliance observed; and any additional control measures needed to comply with the permit requirements. An inspection for a significant storm event may also be used and credited towards one of the monthly inspections.

SWPPP Modifications and Updates

The SWPPP must be maintained and kept up-to-date to reflect current site conditions. If construction or a change in the design, operation, or maintenance at the facility either changes the nature of pollutants discharged in storm water from the facility or increases the quantity of pollutants

discharged, then the permittee must review the selection, design, installation, implementation, and maintenance of the facility's control measures to determine if any modifications to the SWPPP are necessary.

Corrective Actions

If any of the following conditions occur, then the permittee must review and revise the selection, design, installation, implementation, and maintenance of the facility's control measures to ensure that the condition is eliminated and will not be repeated in the future:

- An unauthorized release or discharge (e.g., spill, leak, or discharge of non-storm water not authorized by this or another MPDES permit) occurs at the facility;
- The permittee become aware, or the DEQ determines, that the control measures are not stringent enough for the discharge to meet applicable water quality standards;
- An inspection or evaluation of the facility by a DEQ representative determines that modifications to the control measures are necessary to meet the non-numeric effluent limits in this permit; or
- An inspection finds that the control measures are not being properly operated and maintained.

If an inspection or other observation identifies storm water pollution or control measures needing repair or replacement, them the permittee must document these conditions within 24 hours of making such discovery. Subsequently, within 14 days of such discovery, the permittee must document any corrective action(s) taken or needed, any further investigation the deficiency, or the basis for determining that no further action is needed. Specific documentation required within 24 hours and 14 days is detailed. If it is determined that changes are necessary following the review, then any modifications to the control measures must be made before the next storm event if possible, or as soon as practicable following that storm event. These time intervals are not grace periods, but are schedules considered reasonable for documenting findings and for making repairs and improvements. They are included in this permit to ensure that the conditions prompting the need for these repairs and improvements are not allowed to persist indefinitely.

Employee Training

The SWPPP Administrator must ensure all employees receive in-house training, including all members of the pollution prevention team, who work in areas where industrial materials or activities are exposed to storm water, or who are responsible for implementing activities necessary to meet the conditions of this permit (e.g., inspectors, maintenance personnel). Training must cover both the specific control measures used to achieve the effluent limits in this permit, and monitoring, inspection, planning, reporting, and documentation requirements in other parts of this permit. Training must be conducted at least annually at a minimum and the date of the training and employees in attendance must be documented.

The permittee is required to operate, build, and maintain the facility and storm water practices as identified in their SWPPP. The permittee is free to adjust or change the control measures used at any time. This flexibility allows the permittee to adjust practices as necessary to ensure continued compliance with the permit. The SWPPP must be kept up-to-date to document any changes in BMPs, control measures or corrective actions. Any changes to the SWPPP must be submitted to DEQ within 30 days for review. The submission of a SWPPP is addressed in the compliance schedule as summarized above in Section 2.5.

4.3 Facility Optimization Study

Facilities that receive a nutrient variance must evaluate current facility operations to optimize nutrient reduction with existing infrastructure and analyze other cost-effective methods of nutrient load reductions. DEQ-12B allows for flexibility regarding the scope and content of the study but requires that the optimization study includes, but is not limited to, an assessment of nutrient trading feasibility within the watershed without substantial investment in new infrastructure. DEQ may request the permittee provide the results of the optimization study/nutrient reduction analysis within two years of receiving the variance.

DEQ-12B encourages optimization studies to include, but not be limited to, facility operations and maintenance, reuse, recharge, and land application. However, DEQ-12B clarifies that the changes to facility operations resulting from the analysis carried out are only intended to be refinements to the wastewater treatment system already in place, addressing changes to facility operation and maintenance. Optimizations are not intended to include changes to the facility resulting in structural modification, user rate increases, or substantial capital investment.

This permit requires the completion of an optimization study/nutrient reduction analysis including an assessment of trading with a two year compliance schedule as summarized above in Section 2.5.

4.4 Toxicity Identification Evaluation (TIE)/Toxicity Reduction Evaluation (TRE)

The permit has established monitoring requirements for chronic toxicity. The permit includes a provision to develop and implement a TIE/TRE plan when monitoring indicates effluent toxicity as defined in the permit occurs.

4.5 Reopener Provisions

DEQ may reopen the permit to modify permit conditions and requirements. ARM 17.30.1361 addresses causes for modifying an MPDES permit based on information obtained after permit issuance. The permit also lists specific causes for which it may be reopened and modified. These reopener provisions include the following:

- New water quality standards (when requested by the permittee) (ARM 17.30.1361(2)(c));
- Water quality standards or trigger values being exceeded in the receiving water (ARM 17.30.1361(2)(b));
- Development and approval of a TMDL or wasteload allocation that applies to the permittee (ARM 17.30.1361(2)(b));
- A revision to the water quality management plan that calls for different effluent limitations than what are in the permit; establishment of a toxic prohibition or standard under CWA Section 307(a) that is more stringent than limitations for the toxic pollutant in the permit (ARM 17.30.1361(2)(f) and (g) and 1344(2)); or
- Changes in the whole effluent toxicity protocol or any other conditions related to the control of toxicants that have occurred or are needed (ARM 17.30.1361(b)).

As noted, the specific reopener provisions included in the permit are consistent with the various provisions of ARM 17.30.1361.

5 STANDARD CONDITIONS

Per ARM 17.30.1342, standard conditions must be included in all MPDES permits and the permittee must comply with the standard conditions at all times. These requirements are incorporated into the permit. In addition to these requirements, ARM 17.30.1343 and 40 CFR 122.42 establish additional conditions applicable to specific categories of MPDES permits; the facility is an existing industrial discharger and has the additional requirements of ARM 17.30.1343(a) included in the permit. These requirements establish additional notification for toxic pollutants that exceed a specified level, that exceed the level given in the facility's permit application, or that are not regulated in the permit.

40 CFR 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 CFR 123.25, this Permit omits federal conditions that address enforcement authority specified in 40 CFR 122.41(j)(5) and (k)(2) because the enforcement authority under the ARM is more stringent. In lieu of these conditions, the permit incorporates by reference 75-5-633, MCA.

6 NONSIGNIFICANT DETERMINATION

The WQA states that it is unlawful to cause degradation of state waters without an authorization issued pursuant to 75-5-303, MCA [75-5-605(1)(d), MCA]. ARM 17.30.706(2) states that DEQ will determine whether a proposed activity may cause degradation for all activities which are permitted, approved licensed or otherwise authorized by DEQ, such as issuance of a discharge permit. A nondegradation analysis was conducted in Section 2.2.6 of this fact sheet for the proposed discharges and activities regulated by this permit. Degradation of surface and ground water from sources not authorized to discharge by this permit are not addressed by this determination. Based on this analysis DEQ has made the following determinations:

OUTFALLS 001-003

The discharges from the facility at Outfalls 001-003 are not new or increased sources as defined in ARM 17.30.702 and are therefore not subject to an additional nondegradation or nonsignificance review as required by ARM 17.30.705. The permittee submitted an authorization to degrade state water pursuant to ARM 17.30.706-709. The BHES issued order BHES 93-001-WQB (Order) authorizing degradation and establishing limits in surface water and ground water in the Libby, Poorman and Ramsey Creek watersheds adjacent to the Montanore Project for discharges from the facility. The Order established numeric limits for chromium, copper, iron, manganese, zinc, nitrate + nitrite, total ammonia, and total dissolved solids. The nitrogen species were also addressed as total inorganic nitrogen. Pursuant to the Order, these limits remain in effect during the operational life of the mine and for so long thereafter as necessary.

DEQ has set the effluent limits and conditions for Outfalls 001-003 that comply with the surface water quality standards and the Order.

OUTFALLS 004-008

DEQ has determined these changes are nonsignificant pursuant to ARM 17.30.715(3). Any change in water quality resulting from these discharges is considered nonsignificant provided that the permittee is in compliance with the effluent limits and conditions of the permit.

7 PUBLIC PARTICIPATION

In accordance with ARM 17.30.1372, DEQ issued Public Notice No. MT-15-36 dated July 31, 2015. This public notice states that a tentative decision has been made to reissue an MPDES permit for the Montanore Project and that a draft permit and fact sheet has been prepared. Public comments are invited any time prior to the close of the business September 2, 2015. Comments may be directed to:

DEQ Permitting and Compliance Division
Water Protection Bureau
PO Box 200901
Helena, MT 59620

or DEQWPBPublicNotices@mt.gov

All comments received or postmarked prior to the close of the public comment period will be considered in the formulation of the final permit. DEQ will respond to all substantive comments and issue a final decision within sixty days of the close of the public comment period or as soon as possible thereafter.

All persons, including the applicant, who believe any condition of a draft permit is inappropriate or that DEQ's tentative decision to deny an application, terminate a permit, or prepare a draft permit is inappropriate, shall raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the public comment period.

7.1 Notification of Interested Parties

Copies of the public notice were mailed to the permittee, state and federal agencies, and interested persons who have expressed in interest in being notified of permit actions. A copy of the distribution list is available in the administrative record for this permit. In addition to mailing the public notice, a copy of the notice, draft permit, and fact sheet were posted on DEQ website for 30 days.

Any person interested in being placed on the mailing list for information regarding this MPDES Permit should contact DEQ, reference this facility, and provide a name, address, and phone number.

7.2 Public Hearing

Public Notice MT-15-36 also includes notification that DEQ will hold a public hearing on the draft permit. The public hearing is scheduled to begin at 6:00 PM on August 31, 2015, in the Ponderosa Room at the Libby City Hall located at 952 East Spruce Street in Libby, Montana. DEQ will record public comments on the draft permit during the public hearing.

7.3 Permit Appeal

After the close of the public comment period DEQ will issue a final permit decision. A final permit decision means a final decision to issue, deny, modify, revoke and reissue, or, terminate a permit. A permit decision is effective 30 days after the date of issuance unless a later date is specified in the decision, a stay is granted pursuant to ARM 17.30.1379, or the applicant files an appeal pursuant to 75-5-403, MCA.

The Applicant may file an appeal within 30 days of DEQ’s action to the following address:

Secretary, Board of Environmental Review
Department of Environmental Quality
1520 East Sixth Avenue
PO Box 200901
Helena, Montana 59620-0901

7.4 Additional Information

Requests for additional information or questions regarding this permit should be directed to: Tommy Griffeth at (406) 444-1454 or TGriffeth@mt.gov.

MASTER LIST OF APPENDICES

Appendix and Table Number	Description	Applicability	Status
1. Water Quality Standards and Nondegradation Criteria			
1.A	Applicable Water Quality Standards and Nondegradation Criteria	Libby Creek	Required
1.B	Applicable Water Quality Standards and Nondegradation Criteria	Ramsey Creek	Required
1.C	Applicable Water Quality Standards and Nondegradation Criteria	Poorman Creek	Required
2. Receiving Water Characteristics			
2.A.1	Receiving Water Characteristics—Conventional and Nonconventional Pollutants and Parameters	Libby Creek	Required
2.A.2	Receiving Water Characteristics—Toxic Priority Pollutants	Libby Creek	Required
3. Effluent Characteristics			
3.A.1	Effluent Characteristics—Conventional and Nonconventional Pollutants and Parameters	Outfalls 001 to 003	Required
3.A.2	Effluent Characteristics—Toxic Priority Pollutants	Outfalls 001 to 003	Required
4. Reasonable Potential Analysis—Individual Parameters			
4.A.1	Reasonable Potential Analysis—Libby Creek	Outfalls 001 to 003	Required
4.A.2	Reasonable Potential Analysis—Libby Creek	Outfall 004	Required
5. WQBELs—Individual Parameters			
5.A.1	WQBELs for Outfalls 001-002 Discharging to Libby Creek	Outfalls 001 to 002	Required
5.A.2	WQBELs for Outfall 003 Discharging to Libby Creek	Outfall 003	Required
6. Temperature—Libby Creek			

APPENDIX 1 – WATER QUALITY STANDARDS AND NONDEGRADATION CRITERIA

Table 1.A. Water Quality Standards – Libby Creek

Parameter	Units	Acute Water Quality Standard (S_a)	Chronic Water Quality Standard (S_c)	Human Health Water Quality Standard (S_{hh})	Nondegradation Category	Nondegradation Criterion (S_{ND}) or Not Applicable (NA)
Conventional and Nonconventional Pollutants						
Biochemical Oxygen Demand	mg/L	--	--	--	Narrative	NA
Chemical Oxygen Demand	mg/L	--	--	--	Narrative	NA
Total Organic Carbon	mg/L	--	--	--	Narrative	NA
Total Suspended Solids	mg/L	--	--	--	Harmful	NA
Ammonia	mg/L	32.6	6.67	--	Toxic	1.5(1)
Flow	mgd	--			Flow	NA
Temperature, maximum	°F	See ARM 17.30.623(2)(e)			Harmful	NA
Temperature, minimum	°F	See ARM 17.30.623(2)(e)			Harmful	NA
pH, maximum	s.u.	8.5			Harmful	NA
pH, minimum	s.u.	6.5			Harmful	NA
Chlorine, Total Residual	mg/L	0.019	0.011	4.000	Toxic	NA
E. coli bacteria, summer	CFU/100 ml	126/252			Harmful	NA
E. coli bacteria, winter	CFU/100 ml	630/1,260			Harmful	NA
Nitrate + Nitrite	mg/L	--	--	10	Toxic	1.0(1)
Total Inorganic Nitrogen	mg/L	--	--	--	Nutrient	1.0(1)
Total Nitrogen	mg/L	--	0.275(2)	--	Nutrient	NA
Total Phosphorus	mg/L	--	0.025(2)	--	Nutrient	NA
Oil & Grease	mg/L	--	--	10	Narrative	NA
Dissolved Oxygen	mg/L	See ARM 17.30.623(2)(b)			Toxic	NA
Turbidity	NTU	See ARM 17.30.623(2)(d)			Harmful	NA
Total Dissolved Solids	mg/L	--	--	--	Narrative	100(1)
Hardness, Total (as $CaCO_3$)	mg/L	--	--	--	Narrative	NA
Sulfate (as SO_4)	mg/L	--	--	--	Narrative	NA

Footnotes:
1. Based on BHES Order authorizing degradation
2. Nutrient standard applies July 1 through September 30

Parameter	Units	Acute Water Quality Standard (S_a)	Chronic Water Quality Standard (S_c)	Human Health Water Quality Standard (S_{hh})	Nondegradation Category	Nondegradation Criterion (S_{ND}) or Not Applicable (NA)
Metals, Cyanide, Total Phenol, and Dioxin						
Aluminum, Dissolved	µg/L	750	87	--	Toxic	NA
Antimony, Total	µg/L	--	--	5.6	Toxic	NA
Arsenic, Total	µg/L	340	150	10	Carcinogen	NA
Barium, Total	µg/L	--	--	1,000	Toxic	NA
Beryllium, Total	µg/L	--	--	4	Carcinogen	NA
Cadmium, Total[1]	µg/L	0.52	0.097	5	Toxic	NA
Chromium, Total	µg/L	--	--	100	Toxic	5[2]
Copper, Total[1]	µg/L	3.79	2.85	1,300	Toxic	3[1]
Iron, Total[1]	µg/L	--	1,000	--	Harmful	100[2]
Lead, Total[1]	µg/L	14	0.54	15	Toxic	NA
Magnesium, Total	µg/L	--	--	--	--	NA
Manganese, Total	µg/L	--	--	--	Narrative	50[2]
Mercury, Total	µg/L	1.7	0.91	0.05	Toxic w/BCF > 300	NA
Nickel, Total[1]	µg/L	145.2	16.1	100	Toxic	NA
Selenium, Total	µg/L	20	5	50	Toxic	NA
Silver, Total[1]	µg/L	0.37	--	100	Toxic	NA
Thallium, Total	µg/L	--	--	0.24	Toxic	NA
Zinc, Total[1]	µg/L	37	37	2,000	Toxic	25[2]
Cyanide, Total	µg/L	22	5.2	140	Toxic	NA
Phenol, Total	µg/L	--	--	300	Harmful	NA
Dioxin (2,3,7,8-TCDD)	µg/L	--	--	5×10^{-9}	Carcinogen	NA

Footnotes:
1. Hardness-based standard; based on 25 mg/L hardness per 2012 Department Circular DEQ-7
2. Based on BHES Order

Table 1.B. Water Quality Standards – Ramsey Creek

Parameter	Units	Acute Water Quality Standard (S_a)	Chronic Water Quality Standard (S_c)	Human Health Water Quality Standard (S_{hh})	Nondegradation Category	Nondegradation Criterion (S_{ND}) or Not Applicable (NA)
Conventional and Nonconventional Pollutants						
Biochemical Oxygen Demand	mg/L	--	--	--	Narrative	NA
Chemical Oxygen Demand	mg/L	--	--	--	Narrative	NA
Total Organic Carbon	mg/L	--	--	--	Narrative	NA
Total Suspended Solids	mg/L	--	--	--	Harmful	NA
Ammonia	mg/L	31.3	6.57	--	Toxic	1.5(1)
Flow	mgd	--			Flow	NA
Temperature, maximum	°F	See ARM 17.30.623(2)(e)			Harmful	NA
Temperature, minimum	°F	See ARM 17.30.623(2)(e)			Harmful	NA
pH, maximum	s.u.	8.5			Harmful	NA
pH, minimum	s.u.	6.5			Harmful	NA
Chlorine, Total Residual	mg/L	0.019	0.011	4.000	Toxic	NA
E. coli bacteria, summer	CFU/100 ml	126/252			Harmful	NA
E. coli bacteria, winter	CFU/100 ml	630/1,260			Harmful	NA
Nitrate + Nitrite	mg/L	--	--	10	Toxic	1.0(1)
Total Inorganic Nitrogen	mg/L	--	--	--	Nutrient	1.0(1)
Total Nitrogen	mg/L	--	0.275(2)	--	Nutrient	NA
Total Phosphorus	mg/L	--	0.025(2)	--	Nutrient	NA
Oil & Grease	mg/L	--	--	10	Narrative	NA
Dissolved Oxygen	mg/L	See ARM 17.30.623(2)(b)			Toxic	NA
Turbidity	NTU	See ARM 17.30.623(2)(d)			Harmful	NA
Total Dissolved Solids	mg/L	--	--	--	Narrative	100(1)
Hardness, Total (as $CaCO_3$)	mg/L	--	--	--	Narrative	NA
Sulfate (as SO_4)	mg/L	--	--	--	Narrative	NA

Footnotes:
1. Based on BHES Order authorizing degradation
2. Nutrient standard applies July 1 through September 30

Parameter	Units	Acute Water Quality Standard (S_a)	Chronic Water Quality Standard (S_c)	Human Health Water Quality Standard (S_{hh})	Nondegradation Category	Nondegradation Criterion (S_{ND}) or Not Applicable (NA)
Metals, Cyanide, Total Phenol, and Dioxin						
Aluminum, Dissolved	µg/L	750	87	--	Toxic	NA
Antimony, Total	µg/L	--	--	5.6	Toxic	NA
Arsenic, Total	µg/L	340	150	10	Carcinogen	NA
Barium, Total	µg/L	--	--	1,000	Toxic	NA
Beryllium, Total	µg/L	--	--	4	Carcinogen	NA
Cadmium, Total[(1)]	µg/L	0.52	0.097	5	Toxic	NA
Chromium, Total	µg/L	--	--	100	Toxic	5[(2)]
Copper, Total[(1)]	µg/L	3.79	2.85	1,300	Toxic	3[(1)]
Iron, Total[(1)]	µg/L	--	1,000	--	Harmful	100[(2)]
Lead, Total[(1)]	µg/L	14	0.54	15	Toxic	NA
Magnesium, Total	µg/L	--	--	--	--	NA
Manganese, Total	µg/L	--	--	--	Narrative	50[(2)]
Mercury, Total	µg/L	1.7	0.91	0.05	Toxic w/BCF > 300	NA
Nickel, Total[(1)]	µg/L	145.2	16.1	100	Toxic	NA
Selenium, Total	µg/L	20	5	50	Toxic	NA
Silver, Total[(1)]	µg/L	0.37	--	100	Toxic	NA
Thallium, Total	µg/L	--	--	0.24	Toxic	NA
Zinc, Total[(1)]	µg/L	37	37	2,000	Toxic	25[(2)]
Cyanide, Total	µg/L	22	5.2	140	Toxic	NA
Phenol, Total	µg/L	--	--	300	Harmful	NA
Dioxin (2,3,7,8-TCDD)	µg/L	--	--	5×10^{-9}	Carcinogen	NA

Footnotes:
1. Hardness-based standard; based on 25 mg/L hardness per 2012 Department Circular DEQ-7
2. Based on BHES Order

Table 1.C. Water Quality Standards – Poorman Creek

Parameter	Units	Acute Water Quality Standard (S_a)	Chronic Water Quality Standard (S_c)	Human Health Water Quality Standard (S_{hh})	Nondegradation Category	Nondegradation Criterion (S_{ND}) or Not Applicable (NA)
Conventional and Nonconventional Pollutants						
Biochemical Oxygen Demand	mg/L	--	--	--	Narrative	NA
Chemical Oxygen Demand	mg/L	--	--	--	Narrative	NA
Total Organic Carbon	mg/L	--	--	--	Narrative	NA
Total Suspended Solids	mg/L	--	--	--	Harmful	NA
Ammonia()	mg/L	24.1	5.91	--	Toxic	1.5(1)
Flow	mgd	--			Flow	NA
Temperature, maximum	°F	See ARM 17.30.623(2)(e)			Harmful	NA
Temperature, minimum	°F	See ARM 17.30.623(2)(e)			Harmful	NA
pH, maximum	s.u.	8.5			Harmful	NA
pH, minimum	s.u.	6.5			Harmful	NA
Chlorine, Total Residual	mg/L	0.019	0.011	4.000	Toxic	NA
E. coli bacteria, summer	CFU/100 ml	126/252			Harmful	NA
E. coli bacteria, winter	CFU/100 ml	630/1,260			Harmful	NA
Nitrate + Nitrite	mg/L	--	--	10	Toxic	1.0(1)
Total Inorganic Nitrogen	mg/L	--	--	--	Nutrient	1.0(1)
Total Nitrogen	mg/L	--	0.275(2)	--	Nutrient	NA
Total Phosphorus	mg/L	--	0.025(2)	--	Nutrient	NA
Oil & Grease	mg/L	--	--	10	Narrative	NA
Dissolved Oxygen	mg/L	See ARM 17.30.623(2)(b)			Toxic	NA
Turbidity	NTU	See ARM 17.30.623(2)(d)			Harmful	NA
Total Dissolved Solids	mg/L	--	--	--	Narrative	100(1)
Hardness, Total (as $CaCO_3$)	mg/L	--	--	--	Narrative	NA
Sulfate (as SO_4)	mg/L	--	--	--	Narrative	NA

Footnotes:
1. Based on BHES Order authorizing degradation
2. Nutrient standard applies July 1 through September 30

Parameter	Units	Acute Water Quality Standard (S_a)	Chronic Water Quality Standard (S_c)	Human Health Water Quality Standard (S_{hh})	Nondegradation Category	Nondegradation Criterion (S_{ND}) or Not Applicable (NA)
Metals, Cyanide, Total Phenol, and Dioxin						
Aluminum, Dissolved	µg/L	750	87	--	Toxic	NA
Antimony, Total	µg/L	--	--	5.6	Toxic	NA
Arsenic, Total	µg/L	340	150	10	Carcinogen	NA
Barium, Total	µg/L	--	--	1,000	Toxic	NA
Beryllium, Total	µg/L	--	--	4	Carcinogen	NA
Cadmium, Total[(1)]	µg/L	0.52	0.097	5	Toxic	NA
Chromium, Total	µg/L	--	--	100	Toxic	5[(2)]
Copper, Total[(1)]	µg/L	3.79	2.85	1,300	Toxic	3[(1)]
Iron, Total[(1)]	µg/L	--	1,000	--	Harmful	100[(2)]
Lead, Total[(1)]	µg/L	14	0.54	15	Toxic	NA
Magnesium, Total	µg/L	--	--	--	--	NA
Manganese, Total	µg/L	--	--	--	Narrative	50[(2)]
Mercury, Total	µg/L	1.7	0.91	0.05	Toxic w/BCF > 300	NA
Nickel, Total[(1)]	µg/L	145.2	16.1	100	Toxic	NA
Selenium, Total	µg/L	20	5	50	Toxic	NA
Silver, Total[(1)]	µg/L	0.37	--	100	Toxic	NA
Thallium, Total	µg/L	--	--	0.24	Toxic	NA
Zinc, Total[(1)]	µg/L	37	37	2,000	Toxic	25[(2)]
Cyanide, Total	µg/L	22	5.2	140	Toxic	NA
Phenol, Total	µg/L	--	--	300	Harmful	NA
Dioxin (2,3,7,8-TCDD)	µg/L	--	--	5×10^{-9}	Carcinogen	NA

Footnotes:
1. Hardness-based standard; based on 25 mg/L hardness per 2012 Department Circular DEQ-7
2. Based on BHES Order

APPENDIX 2 – RECEIVING WATER CHARACTERISTICS

Where receiving water quality data is available it may be used in the development of WQBELs for the parameters of concern (POC). For new or increased sources subject to nondegradation review, existing water quality, as defined in ARM 17.30.702, is necessary for all POC present in the discharge. Criteria for establishing POC is discussed in Section 2.2.5 of this fact sheet. Appendix 2 describes the process used to determine the receiving water concentrations or values for the purpose of developing WQBELs.

Receiving water quality should be based on samples collected during the period of critical stream flow (Q_s) as described in Section 2.2.8. Since Q_s is an infrequent event and data is not typically available, the background concentration (C_s) must be estimated based on water quality data that is collected outside of this flow condition. To account for the uncertainties in estimating background data, DEQ uses the upper and lower quartiles of the sample data. The upper quartile is defined as the 75th percentile of the measured or observed data and the lower quartile is the 25th percentile of the same data set. A minimum of 10 data points or measurements must be available and representative of the range of hydrologic conditions in the receiving water. Data used in this analysis must be collected upstream of the point of discharge for flowing water bodies or outside of the influent of the discharge for non-flowing water bodies.

For most constituents, the critical background concentration is defined to be the upper quartile of the sample data for purposes of a reasonable potential analysis and determining assimilative capacity. In some cases, including application of the nondegradation criteria in ARM 17.30.715(1), changes in existing water quality or the water quality standard in expressed relative to the background concentration in the receiving water. In these situations the WQBEL is based on the lower bound estimate of the interquartile range (25th percentile value) to maintain the existing water quality of the receiving water. Additional details on developing WQBELs based on these estimates are presented in Appendix 5.

Critical Background Receiving Water Pollutant Concentration (C_s)

To estimate the value of C_s, for the purposes of the Reasonable Potential Analysis (RPA) in Appendix 4 and Development of Waste Load Allocations (WLAs) and WQBELs in Appendix 5, the final critical background receiving water pollutant concentration (C_s) is determined as follows:

1. The reported data must use an approved method of analysis (40 CFR 136 unless otherwise specified) and achieve the required reporting value (RRV) in DEQ Circular DEQ-7, or achieve a level of analysis that is at least 1/10 of the lowest applicable water quality standard
2. Reject data which has not achieved the applicable RRV, ML, or other QA/QC objectives
3. Determine if there is sufficient data to characterize the receiving water. This data must represent the actual range of variation, generally 10 or more data points
4. Determine the 25th percentile value (C_{25}) of the data set
5. Determine the 75th percentile value (C_{75}) of the data set

Where there is insufficient data for a parameter, generally less than 10 data points, C_s is undetermined and reported as "Undetermined." In this case, the RPA and WLA/WQBEL for the POC are based on meeting the applicable water quality standard or nondegradation criteria at the end-of-pipe (i.e. no receiving water dilution).

Where there are 10 or more data points, for pollutants with a numeric water quality standard or non-significance criterion expressed as an *absolute value* (e.g. numeric criterion or standard), C_s is determined as follows:

1. If C_{75} is a quantified value (i.e. not reported as less than detect), the background concentration (C_s) is estimated by C_{75}
2. If C_{75} is a non-quantified value (i.e. reported as less than detect), and if the water quality standard or applicable nondegradation criterion is less than the non-quantified value, then DEQ will set C_s = water quality standard (no assimilative capacity).
3. If C_{75} is a non-quantified value and if RRV is less than the water quality standard, DEQ will set C_s = non-quantified value.

For pollutants with a water quality standard or non-significance criterion expressed as a *relative value* (e.g. increase above background) based on background concentration and where $\geq$10 data points are available, C_s is determined as follows:

1. If C_{25} is a quantified value, then $C_s = C_{25}$
2. If C_{25} is a non-quantified value, then C_s = non-quantified value.

For parameters with nondegradation criterion expressed as a relative value and a numeric water quality standard expressed as an absolute value, this method may only be applied if the value determined by C_{25} is less than the applicable water quality standard. For parameters for which the background concentration or value is undetermined ("Undetermined"), the waste load allocation will be based on 1/10 the lowest applicable water quality standard.

The receiving water data is described in Tables 2.A.1 and 2.A.2.

Table 2.A.1. Receiving Water Characteristics – Libby Creek

Parameter	Units	Required Reporting Value (RRV)	Lower Quartile (C_{25})	Upper Quartile (C_{75})	Number of Samples[(1)]	Comment
Conventional and Nonconventional Pollutants						
Biochemical Oxygen Demand	mg/L	2	--	--	--	Undetermined
Chemical Oxygen Demand	mg/L	1	--	--	--	Undetermined
Total Organic Carbon	mg/L	2	--	--	--	Undetermined
Total Suspended Solids	mg/L	4	1	2	72	(2)
Ammonia	mg/L	0.7	0.06	0.1	72	(2)
Flow	mgd	--	--	--	--	Undetermined
Temperature, summer	°F	0.1	--	--	--	Undetermined
Temperature, winter	°F	0.1	--	--	--	Undetermined
pH	s.u.	0.1	--	--	--	Undetermined
Chlorine, Total Residual	mg/L	0.1	--	--	--	Undetermined
E. coli bacteria, summer	CFU/100 ml	1	--	--	--	Undetermined
E. coli bacteria, winter	CFU/100 ml	1	--	--	--	Undetermined
Nitrate + Nitrite	mg/L	0.2	0.1	0.2	73	(2)
Total Inorganic Nitrogen	mg/L	0.1	0.1	0.2	73	(2)
Total Kjeldahl Nitrogen	mg/L	0.15	0.22	0.31	71	(2)
Total Nitrogen	mg/L	0.1	--	--	--	Undetermined
Total Phosphorus	mg/L	0.001	0.005	0.01	71	(2)
Oil & Grease	mg/L	5	--	--	--	Undetermined
Dissolved Oxygen	mg/L	0.1	--	--	--	Undetermined
Turbidity	NTU	1	0.195	0.320	71	(2)
Total Dissolved Solids	mg/L	10	33.3	91.9	8	(3)
Hardness, Total (as $CaCO_3$)	mg/L	1	6	19	39	--
Sulfate (as SO_4)	mg/L	1	2	3	71	(2)

Footnotes:
1. Total number of samples reported including those samples reported with unquantified (i.e. “less than”) values.
2. Analysis did not include unquantified samples.
3. Historic sampling data 1973-1991.

Table 2.A.2. Receiving Water Characteristics – Libby Creek

Parameter	Units	Required Reporting Value (RRV)	Lower Quartile (C_{25})	Upper Quartile (C_{75})	Number of Samples[1]	Comment or Not Applicable (NA)
Metals, Cyanide, Total Phenol, and Dioxin						
Aluminum, Dissolved	µg/L	9	37	79	72	(2)
Antimony, Total	µg/L	0.5	NA	NA	2	(2)
Arsenic, Total	µg/L	1	5	5	72	(3)
Barium, Total	µg/L	3	NA	NA	1	(2)
Beryllium, Total	µg/L	0.8	NA	NA	2	(2)
Cadmium, Total	µg/L	0.03	0.10	0.50	72	--
Chromium, Total	µg/L	10	4	4	72	(2)
Copper, Total	µg/L	2	1	2	74	--
Iron, Total	µg/L	20	50	50	72	--
Lead, Total	µg/L	0.3	1	1	72	--
Magnesium, Total	µg/L	--	--	--	--	Undetermined
Manganese, Total	µg/L	1	20	20	72	--
Mercury, Total	µg/L	0.005	0.2	0.2	72	--
Nickel, Total	µg/L	2	NA	NA	2	(2)
Selenium, Total	µg/L	1	NA	NA	1	(2)
Silver, Total	µg/L	0.2	0.35	0.80	72	(2)
Thallium, Total	µg/L	0.2	NA	NA	2	(2)
Zinc, Total	µg/L	8	20	20	72	--
Cyanide, Total	µg/L	3	--	--	--	Undetermined
Phenol, Total	µg/L	10	--	--	--	Undetermined
Dioxin (2,3,7,8-TCDD)	µg/L	(4)	--	--	--	Undetermined

Footnotes:
1. Total number of samples reported including those samples reported with unquantified (i.e. “less than”) values.
2. Analysis did not include unquantified samples.
3. Analysis did not meet DEQ’s RRV.
4. See Footnote 10 in Circular DEQ-7 (2012).

APPENDIX 3 – EFFLUENT CHARACTERISTICS

The fact sheet must include a description of the type and quantity of wastes (pollutants) to be discharged. This information is used to determine if additional effluent limitations are necessary. Effluent monitoring and characterization is based on the daily discharge of pollutants and summarized as monthly average and daily maximum values as defined in ARM 17.30.1304. The 30-day average maximum daily values and samples size reported by the permittee are given in Tables 3.A.1 and 3.A.2. This data must be based on the previous 3-5 years and represent the current operation of the facility or be estimated by the permittee.

For purposes for determining reasonable potential and assessing the need for a WQBEL, DEQ calculates a reasonable measure of the critical (maximum) daily effluent concentration (C_d) accounting for the variability of the effluent as determined by the coefficient of variation (CV) and sample size. Due to the non-normal distribution of most effluents and low sample frequency (small sample size), DEQ estimates C_d based on the 95th percentile of the expected effluent concentration following procedure described in Chapter 3 of EPA's *Technical Support Document for Water Quality Based Toxic Control* (TSD) (EPA/505/2-90-001, March 1991). C_d is based on the estimated 95th percentile value and is calculated as follows:

$$C_d = C_{d(max)} * RPMF$$

Where:

$C_{d(max)}$ = Effluent Maximum Daily value; Tables 3.A.1 and 3.A.2
RPMF = Reasonable Potential Multiplying Factor; TSD Table 3-2

Estimating the CV requires that the standard deviation is calculated using the actual measured daily discharge values. In most cases, individual daily discharge values are not reported on the discharge monitoring reports (DMRs). When daily discharge values are not available, DEQ assumes a CV of 0.6.

The effluent characteristics of the facility are presented below in Tables 3.A.1 and 3.A.2. The effluent characteristics presented are based on the MPDES permit application with supplemental materials submitted by the permittee. Identical effluent characteristics are reported for all Outfalls 001-003 since no discharges have occurred at Outfalls 002 or 003 and the source of the effluent and the wastewater treatment systems are identical according to the application.

Table 3.A.1. Effluent Characteristics – Conventional and Nonconventional Pollutants

Parameter	Units	Maximum Monthly Average or Long Term Average	Maximum Daily Value	Number of Samples (n)	Coefficient of Variation (CV)	Multiplying Factor 95% Confidence Level	Critical Effluent Concentration (C_d)
Biochemical Oxygen Demand	mg/L	--	<3	1	0.6	6.2	<18.6
Chemical Oxygen Demand	mg/L	--	<25	1	0.6	6.2	<155
Total Organic Carbon	mg/L	--	2.1	1	0.6	6.2	13.0
Total Suspended Solids	mg/L	1	24	32	0.6	1.2	28.8
Ammonia (as N)	mg/L	<0.01	1	38	0.6	1.2	1.2
Flow	gpm	365	500	--	--	--	--
Temperature, winter	°C	13	13	17	--	--	--
Temperature, summer	°C	16	16	17	--	--	--
pH, maximum	s.u.	--	7.6	32	--	--	--
pH, minimum	s.u.	--	8.7	32	--	--	--
Chlorine, Total Residual	mg/L	Believed Absent		--	--	--	--
E. coli bacteria, summer	CFU/100 ml	Believed Absent		--	--	--	--
E. coli bacteria, winter	CFU/100 ml	Believed Absent		--	--	--	--
Nitrate + Nitrite (as N)	mg/L	0.1	3	29	0.6	1.2	3.6
Total Inorganic Nitrogen (as N)	mg/L	--	--	--	--	--	--
Total Organic Nitrogen (as N)	mg/L	0.1	0.3	23	0.6	1.3	0.39
Total Phosphorus	mg/L	0.01	0.02	18	0.6	1.4	0.028
Oil & Grease	mg/L	1	15	21	0.6	1.4	21
Dissolved Oxygen, maximum	mg/L	--	--	--	--	--	--
Dissolved Oxygen, minimum	mg/L	--	--	--	--	--	--
Turbidity	NTU	--	--	--	--	--	--
Total Dissolved Solids	mg/L	--	--	--	--	--	--
Hardness, Total (as $CaCO_3$)	mg/L	--	--	--	--	--	--
Sulfate (as SO_4)	mg/L	25	100	33	0.6	1.2	39.6
Total Kjeldahl Nitrogen (as N)	mg/L	--	--	--	--	--	--

Table 3.A.2. Effluent Characteristics – Toxic Priority Pollutants

Parameter	Units	Maximum Monthly Average or Long Term Average	Maximum Daily Value	Number of Samples (n)	Coefficient of Variation (CV)	Multiplying Factor 95% Confidence Level	Critical Effluent Concentration (C_d)
Aluminum, Total Recoverable	µg/L	0.05	0.5	18	0.6	1.4	0.7
Antimony, Total Recoverable	µg/L	0.3	0.7	19	0.6	1.4	0.98
Arsenic, Total Recoverable	µg/L	10	20	19	0.6	1.4	28
Barium, Total Recoverable	mg/L	0.01	0.02	18	0.6	1.4	0.028
Beryllium, Total Recoverable	µg/L	Believed Absent		--	--	--	--
Cadmium, Total Recoverable	µg/L	<0.01	0.01	33	0.6	1.2	0.012
Chromium, Total Recoverable	µg/L	0.2	10	33	0.6	1.2	12
Chromium, Hexavalent	µg/L	--	--	--	--	--	--
Chromium, Trivalent	µg/L	--	--	--	--	--	--
Copper, Total Recoverable	µg/L	0.5	2	33	0.6	1.2	2.4
Iron, Total Recoverable	µg/L	500	1,000	33	0.6	1.2	1,200
Lead, Total Recoverable	µg/L	0.5	2	33	0.6	1.2	2.4
Magnesium, Total Recoverable	µg/L	5,000	6,000	31	0.6	1.2	7,200
Manganese, Total Recoverable	µg/L	10	50	33	0.6	1.2	60
Mercury, Total Recoverable	µg/L	Believed Absent		--	--	--	--
Nickel, Total Recoverable	µg/L	Believed Absent		--	--	--	--
Selenium, Total Recoverable	µg/L	Believed Absent		--	--	--	--
Silver, Total Recoverable	µg/L	Believed Absent		--	--	--	--
Thallium, Total Recoverable	µg/L	Believed Absent		--	--	--	--
Zinc, Total Recoverable	µg/L	30	50	33	0.6	1.2	60
Cyanide, Total	µg/L	Believed Absent		--	--	--	--
Phenol, Total	µg/L	Believed Absent		--	--	--	--
Dioxin (2,3,7,8-TCDD)	µg/L	Believed Absent		--	--	--	--
GC/MS Fraction-Volatile	µg/L	Believed Absent		--	--	--	--
GC/MS Fraction-Acid	µg/L	Believed Absent		--	--	--	--
GC/MS Fraction-Base/Neutral	µg/L	Believed Absent		--	--	--	--
GC/MS Fraction-Pesticides	µg/L	Believed Absent		--	--	--	--

APPENDIX 4 – REASONABLE POTENTIAL ANALYSIS

Following 40 CFR 122.44(d), an effluent limit must be established in the permit if there is reasonable potential (RP) that any parameter of concern (POC) in the discharge causes or contributes to an excursion of a numeric or narrative water quality standard. POCs are identified in Section 2.2.5 of this fact sheet. The applicability of the nondegradation criteria to the discharge(s) is discussed in Section 2.2.6 of this fact sheet. The resultant receiving water concentration (C_r) for the POC is calculated from the modified steady state mass-balance equation (Equation 1) expressed in terms of the dilution ratio (D) provided by a mixing zone:

$$C_r = \frac{C_d + (D * C_s)}{(1 + D)} \quad \text{(Equation 3)}$$

Where:

$D_{a/c}$	=	acute dilution ratio (D_a) or chronic dilution ratio (D_c), Sections 2.2.7 and 2.2.8
C_s	=	critical receiving water pollutant concentration, Appendix 2
C_d	=	critical effluent pollutant concentration, Appendix 3
C_r	=	resultant receiving water pollutant concentration

Where the calculated value of C_r exceeds any applicable water quality standard (S) or nondegradation criterion (S_{ND}), there is a finding of RP and a WQBEL is required for that parameter. WQBELs are discussed in Section 2.2.9 and calculated for these pollutant(s) in Appendix 5 of this fact sheet.

Two values of C_r are calculated since the resulting receiving water concentration is a function of the dilution ratio:

- $C_{r\text{-}a}$ is the receiving water concentration based on the acute dilution ratio (D_a) and
- $C_{r\text{-}c}$ is the receiving water concentration based on numeric chronic dilution ratio (D_c) granted for chronic aquatic life, human health or other narrative criterion.

RP is demonstrated for any applicable acute aquatic life standard (S_a) if:

$$C_{r\text{-}a} \geq S_a$$

Where $C_{r\text{-}a}$ is calculated as follows:

$$C_{r\text{-}a} = \frac{C_d + (D_a * C_s)}{(1 + D_a)}$$

For a chronic aquatic life (S_c), human health (S_{hh}), or Board (S_{BHES}) standard, RP is demonstrated if:

$$C_{r\text{-}c} \geq [S_c, S_{hh}, \text{or } S_{BHES}]$$

Where $C_{r\text{-}c}$ is calculated as follows:

$$C_{r\text{-}c} = \frac{C_d + (D_c * C_s)}{(1 + D_c)}$$

With respect to new sources for purposes of conducting the reasonable potential analysis (RPA), all nondegradation criteria are considered to be chronic criteria and apply outside of any applicable

mixing zone (ARM 17.30.505(1)(b)); any applicable nondegradation criterion (S_{ND}) is given in Appendix 1. When performing a RPA for new sources, RP for acute aquatic life standards are calculated as described in this appendix above. For new sources subject to the nondegradation criteria of ARM 17.30.715, RP is demonstrated as follows:

$$C_{r-c} \geq S_{ND}$$

Where C_{r-c} is calculated as follows:

$$C_{r-c} = \frac{C_d + (D_c * C_s)}{(1 + D_c)}$$

Table 4.A.1 summarizes the acute and chronic RPA for existing discharges not subject to nondegradation requirements. Input values for the RPA are given in previous sections of this fact sheet for this discharger, and summarized as follows:

Parameter	Description	Source of Information
S_a, S_c, S_{hh}	Applicable Water Quality Standards	Section 2.2.2; Appendix 1
S_{ND}	Applicable Nondegradation Criterion	Section 2.2.6; Appendix 1
S_{BHES}	Authorization to Degrade	Section 1.2.7; Appendix 1
C_s	Critical Receiving Water Pollutant Concentration	Section 2.2.8; Appendix 2
C_d	Critical Effluent Pollutant Concentration	Section 2.2.8; Appendix 3
D_a, D_c	Applicable Dilution Ratio	Section 2.2.7 and Section 2.2.8

Table 4.A.1. RPA, Outfalls 001-003 Discharging to Libby Creek

Parameter	Units	Acute Standard	Chronic Standard	Human Health Standard	BHES Order	Critical Effluent Conc.	Critical Background Receiving Water Conc.	Acute Dilution Allowance	Chronic Dilution Allowance	Projected Receiving Water Conc., Acute	Projected Receiving Water Conc., Chronic/Human Health/BHES	Reasonable Potential
		S_a	S_c	S_{hh}	S_{BHES}	C_d	C_s	%	%	C_{r-a}	C_{r-c}	(Yes/No/Undetermined)
Aluminum, Dissolved	µg/L	750	87	--	--	0.7	79	0	0	0.70	0.70	No
Antimony, Total	µg/L	--	--	5.6	--	0.98	--	NA	0	NA	0.98	No
Arsenic, Total	µg/L	340	150	10	--	28	(1)	0	0	--	--	Undetermined[1]
Barium, Total	µg/L	--	--	1,000	--	0.028	--	NA	0	NA	0.028	No
Cadmium, Total	µg/L	0.52	0.097	5	--	0.012	0.50	0	0	0.0138	0.0138	No
Chromium, Total	µg/L	--	--	100	5	12	4	NA	25	NA	9.33	Yes
Copper, Total	µg/L	3.79	2.85	1,300	3	2.4	2	0	0	2.32	2.32	No
Iron, Total	µg/L	--	1,000	--	100	1,200	50	NA	25	NA	828	Yes
Lead, Total	µg/L	14	0.54	15	--	2.4	1	0	25	2.33	1.93	Yes
Manganese, Total	µg/L	--	--	--	50	60	20	NA	25	NA	46.7	No[2]
Mercury, Total	µg/L	1.7	0.91	0.05	--	0.0021[3]	0.2	0	0	.0021	.0021	No[3]
Sulfate	mg/L	--	--	250[4]	--	39.6	3	NA	0	NA	140	No
Zinc, Total	µg/L	37	37	2,000	25	60	20	0	25	58.2	46.6	Yes
Oil & Grease	mg/L	--	--	10	--	19.5	--	NA	0	NA	21	Yes
Total Nitrogen, as N	mg/L	--	0.275	--	--	0.39	0.465[5]	NA	100	NA	1.57	Yes[6]
Total Inorganic Nitrogen, as N	mg/L	--	--	--	1.0	0.53	0.2	NA	0	NA	0.65	No[3]
Total Ammonia, as N	mg/L	32.6	6.67	--	1.5	1.2	0.1	0	0	1.12	1.12	No
Nitrate + Nitrite, as N	mg/L	--	--	10	1.0	3.6	0.2	NA	0	NA	3.63	Yes
Total Phosphorus, as P	mg/L	--	0.025	--	--	0.028	0.01	NA	100	NA	0.016	No[6]

Parameter	Units	Acute Standard	Chronic Standard	Human Health Standard	BHES Order	Critical Effluent Conc.	Critical Background Receiving Water Conc.	Acute Dilution Allowance	Chronic Dilution Allowance	Projected Receiving Water Conc., Acute	Projected Receiving Water Conc., Chronic/Human Health/BHES	Reasonable Potential
		S_a	S_c	S_{hh}	S_{BHES}	C_d	C_s	%	%	C_{r-a}	C_{r-c}	(Yes/No/Undetermined)
Total Suspended Solids	mg/L	--	--	--	--	28.8	2	NA	--	NA	--	Undetermined(7)
Total Dissolved Solids	mg/L	--	--	--	100	(8)	91.9	NA	--	NA	--	Undetermined(8)

Footnotes:
NA = Not Applicable
1. Data does not meet QA/QC requirements.
2. Requires mixing to demonstrate no RP.
3. Analysis is based on DMR data.
4. Based on secondary MCL.
5. Value used is based on paired ambient data for Total Kjeldahl Nitrogen and Nitrate + Nitrite.
6. Variance requested.
7. No numeric standard.
8. No effluent data available.

APPENDIX 5 – WLA AND WQBEL DEVELOPMENT

In accordance with 40 CFR 122.44(d) the permit must contain an effluent limit for any parameter which DEQ determines has a reasonable potential to cause or contribute to a violation of water quality standards, including nondegradation-based standards. This determination was completed in Appendix 4 and discussed in Section 2.2.6 of the fact sheet. WQBELs are derived from a wasteload allocation (WLA) which is calculated based on the applicable numeric water quality standard and background pollutant concentration in the receiving water during the critical conditions described in Section 2.2.8. For existing discharges, WLAs are based on acute aquatic life, chronic aquatic life, and human health standards. For new discharges, WLAs are the same as existing discharges with an additional WLA from the applicable nondegradation criteria (see Section 2.2.6). These WLAs are then translated into maximum daily limitations (MDLs) and average monthly limitations (AMLs) to reflect the respective averaging times given in the surface water quality standards (ARM 17.30.635), Department Circular DEQ-7, and MPDES requirements at ARM 17.30.1345.

The background concentration (C_s) affects the determination of the WLA for both new and existing sources. For new sources subject to nondegradation criteria described in Section 2.2.6, WQBELs must to set to protect existing water quality unless an authorization to degrade state waters pursuant ARM 17.30.706 -708 has been issued. As defined in ARM 17.30.702, existing water quality is defined as the quality of the receiving water immediately prior to commencement of the activity or that which may adequately be demonstrated to have existed on or after July 1, 1971, whichever is the highest.

For existing sources where the background concentration (C_s) exceeds the applicable water quality standard (S), the WLA is set at the standard (WLA = S) unless DEQ has determined through a TMDL that the background pollutant is due to natural sources. The WQA at 75-5-306, MCA, does not require treatment of wastes to purer than natural conditions provided all minimum treatment requirements (e.g. any applicable TBELs) have been applied.

Following selection of the appropriate instream target and background condition, the WLA is calculated from the steady state mass-balanced model following:

$$WLA = S + D(S - C_s) \quad \text{Equation 4}$$

Where:

WLA	=	calculated wasteload allocation
S	=	numeric water quality standard
D	=	dilution ratio (see Sections 2.2.7 and 2.2.8)
C_s	=	critical receiving water pollutant concentration prior to discharge

The following procedure is used to select the appropriate WLAs for both new and existing sources:

Receiving Water Condition	Determination of the WLA With Respect to Background Concentration
New Sources Discharging to High Quality Waters	
$C_s < S_{ND} < S$	Available dilution Calculate WLA using Equation 4 substituting S_{ND} for S in the equation
$S_{ND} < C_s < S$	No dilution is available (D= 0) No increase above background allowed Set WLA = C_s
$S_{ND} < S < C_s$	No dilution is available (D= 0) No assimilative capacity; See ARM 17.30.1311(7) Set WLA = S
Existing Sources Discharging to High Quality Waters	
$C_s < S$	Available dilution Calculate WLA using Equation 4
$S < C_s$	No dilution is available (D= 0) No assimilative capacity; See ARM 17.30.505(1)(d) Set WLA = S

Where:
C_s is the critical upstream receiving water pollutant concentration
WLA is the wasteload allocation
S_{ND} is the allowable in-stream concentration based on applicable nondegradation criterion
S is the allowable in-stream concentration based on applicable numeric water quality standard

Acute, chronic, human health, and BHES WLAs based on Equation 4 are given in Tables 5.A.1 through 5.A.4 for the parameters of concern.

The applicable WLA are converted to effluent limitations based on the procedures given in EPA's TSD (pp. 93-114) based on the averaging period and frequency given in Montana Surface Water Quality Standards and Procedures, ARM 17.30.601 – 670, and Department Circular DEQ-7.

Aquatic Life Effluent Limitations: In most cases, there are at least two aquatic life WLAs, namely a WLA based on the acute aquatic life standard (WLA_a) and at least one WLA based on the chronic aquatic life standard (WLA_c or $WLA_{30\text{-day c}}$ for ammonia). For each of these WLAs, there is a corresponding long-term average effluent concentration (LTA) calculated by multiplying the WLA by a factor (WLA multiplier). This multiplier is a statistically-based factor derived from the ratio of the WLA, set at a specific percentile value, to the LTA. The value of the multiplier varies depending on the coefficient of variation (CV) of the data set, the percentile value for the WLA (e.g., 99th percentile), and whether the WLA is based on an acute (1-hour average) or chronic (typically, 4-day average), or 30-day chronic (for ammonia) water quality standard. DEQ sets the WLA at the 99th

percentile on the lognormal distribution. The equations for the WLA multipliers (WLA multiplier$_{acute99}$, WLA multiplier$_{chronic99}$, WLA multiplier$_{30\text{-day chronic99}}$ are shown below:

$$\text{WLA multiplier}_{acute99} = e^{\wedge}(0.5\sigma^2 - z\sigma)$$
$$\text{WLA multiplier}_{chronic99} = e^{\wedge}(0.5\sigma_4^2 - z\sigma_4)$$
$$\text{WLA multiplier}_{30\text{-day chronic99}} = e^{\wedge}(0.5\sigma_{30}^2 - z\sigma_{30})$$

Where:

σ	=	$[ln(CV^2 + 1)]^{0.5}$
σ^2	=	$ln(CV^2 + 1)$
σ_4	=	$\{ln[(CV^2/4) + 1]\}^{0.5}$
σ_4^2	=	$ln[(CV^2/4) + 1]$
σ_{30}	=	$\{ln[(CV^2/30) + 1]\}^{0.5}$
σ_{30}^2	=	$ln[(CV^2/30) + 1]$
z	=	2.326 for 99th percentile probability basis

The corresponding LTAs are calculated as follows:

$$LTA_a = WLA_a * \text{WLA multiplier}_{acute99}$$
$$LTA_c = WLA_c * \text{WLA multiplier}_{chronic99}$$
$$LTA_{30\text{-day chronic99}} = WLA_{30\text{-day chronic99}} * \text{WLA multiplier}_{30\text{-day chronic99}}$$

Since the calculated LTAs do not have different averaging periods, they are directly comparable in order to select the most protective aquatic life LTA (i.e., the LTA that ensures that both aquatic life WLAs are met). This WLA is the basis for calculating effluent limitations that protect aquatic life from both acute and chronic effects. The calculated acute and chronic LTAs are given in Tables 5.A.1 and 5.A.2.

The two aquatic life LTAs represent the two performance levels that the facility would need to maintain, one that will protect against acute toxic effects and one that will protect against chronic toxic effects. By comparing the two LTAs and selecting the minimum LTA as the basis for the aquatic life WQBELs applicable to the facility, the procedure ensures that the calculated AML and MDL are based on a single performance level that will protect against both acute and chronic toxic effects.

$$\text{LTA} = \text{Minimum of the } LTA_a \text{ and the } LTA_c \text{ (and } LTA_{30\text{--day chronic99}} \text{ for ammonia)}$$

Effluent limitations for protection of aquatic life are calculated by multiplying the most protective aquatic life LTA by multipliers based on the lognormal distribution. Each multiplier is a statistically-based factor that reflects the relationship between the LTA and the effluent limitations. The value of the multiplier for each effluent limitation varies depending on:

- The probability basis of the effluent limitation (i.e., the percentile value on the lognormal distribution of effluent pollutant concentrations where the limitation will be set, such as 95th percentile or 99th percentile);

- The **CV** of the data set; and
- The number of samples (for the AML) averaged in order to measure compliance with the effluent limitation.

The AML and MDL multipliers are based on the following:

- Setting the AML at a 95th percentile occurrence probability and the MDL at a 99th percentile occurrence probability; these probability bases are consistent with EPA's recommendations in the TSD and consistent with the probability bases EPA uses to derive technology-based requirements in the effluent guidelines;
- The CV used in the reasonable potential determination (i.e. a calculated CV if there are at least 10 data points available or a default CV of 0.6 if a CV cannot be calculated); and
- The actual monthly sampling frequency that will be required in the permit, unless the planned sampling frequency is one time per month or less; if the sampling frequency that will be specified in the permit is one time per month or less, DEQ uses a value for sampling frequency (n) in the formula for calculating the AML that is greater than one. This procedure assumes a sampling frequency of two to four times per month in order to ensure that the AML will not exceed any of the calculated WLAs, as recommended in EPA's TSD (pp. 107-108).

The formulae for calculating the AML and the MDL from the most protective aquatic life LTA are shown below:

$$AML_{aquatic\ life} = LTA * AML_{multiplier95}$$
$$MDL_{aquatic\ life} = LTA * MDL_{multiplier99}$$

The AML multiplier is calculated as:

$$AML_{multiplier95} = e^{\wedge}(z\sigma_n - 0.5\sigma_n^2)$$

Where:

σ_n	=	$\{ln[(CV^2/n) + 1]\}^{0.5}$
σ_n^2	=	$ln[(CV^2/n) + 1]$
z	=	1.645 for 95th percentile probability basis
n	=	number of samples per month that will be required in the permit

The MDL multiplier is calculated as:

$$MDL_{multiplier99} = e^{\wedge}(z\sigma - 0.5\sigma^2)$$

Where:

σ	=	$[ln(CV^2 + 1)]^{0.5}$
σ^2	=	$ln(CV^2 + 1)$
z	=	2.326 for 99th percentile probability basis

For parameters whose chronic aquatic life water quality standard is expressed as a single numeric value, there will be only a single corresponding WLA. The following procedure applies:

- Consider the single WLA to be WLA_c;
- Using the CV determined in the reasonable potential analysis, calculate an LTA that will allow the effluent to meet WLA_c using the equations for the chronic WLA above; and
- Derive an AML and MDL based on the LTA and CV using the equations above.

Human Health Effluent Limitations*:* Montana's numeric human health numeric standards are expressed as values that may not be exceeded in the receiving water. Because of this requirement, it is necessary to set human health effluent limitations that meet a given WLA on a daily basis. DEQ uses the following approach to establish the effluent limitations for protection of human health:

For parameters where the human health standard is the limiting criteria, the AML is set equal to the WLA_{hh}, as stated in TSD Section 5.4.4. However, in accordance with Circular DEQ-7 Footnote 16, the receiving water "concentrations may not exceed" any human health standard; therefore the MDL is also set equal to the WLA_{hh}.

Nondegradation-based Effluent Limitations: Effluent limitations are calculated from nondegradation criteria using the procedures for aquatic life standards described above, treating the nondegradation criterion in the same manner as a chronic standard for purposes of calculating an LTA. A second LTA is calculated based on the acute water quality standard. The two LTAs represent two performance levels that the facility would need to maintain: one that will protect against acute toxic effects and one that will meet the nondegradation criteria. By comparing the two LTAs and selecting the minimum LTA as the basis for WQBELs for the facility, the procedure ensures that the calculated AML and MDL are based on a single performance level that will protect against acute toxic effects and meet the nondegradation criteria.

$$LTA_m = \text{Minimum of } LTA_a \text{ and } LTA_{ND}$$

The remainder of the procedure for calculating the AML and MDL from the lowest LTA follows the procedures for aquatic life standards described above. These limitations are the final WQBELs for the parameter.

Selection of Final Water Quality-based Effluent Limitations: The final WQBELs for a given parameter are determined as follows:

- For discharges not subject to nondegradation criteria, DEQ compares the AML and MDL calculated from the aquatic life standards to the AML and MDL calculated from human health standards. The lowest AML and the lowest MDL are the final WQBELs because the lowest of each of these limitations will assure attainment of both the aquatic life and human health standards.
- For discharges subject to nondegradation criteria no further comparison is needed to determine the final WQBELs. The procedures outlined above ensure attainment of both the nondegradation criteria and water quality standards.

Stringency and Anti-backsliding: The calculated WQBEL for a parameter at each outfall must be compared to any applicable TBELS for that same parameter in order to determine the final effluent limits in the permit that meet the requirements of Section 301 of the CWA and protect the designated uses of the receiving water as required by Section 302 of the CWA. This stringency analysis is discussed in Section 2.3.2 above. DEQ must also consider the anti-backsliding requirements of Section 402 of the CWA in determining the final effluent limits in the permit (see Section 2.3.1 above).

Table 5.A.1. WQBELs for Outfalls 001-002 Discharging to Libby Creek

Parameter	Units	Acute Wasteload Allocation (WLA_a)	Chronic Wasteload Allocation (WLA_c)	Human Health Wasteload Allocation (WLA_{hh})	BHES Wasteload Allocation (WLA_{hh})	CV	Acute Long Term Average (LTA_a)	Chronic Long Term Average (LTA_c)	Minimum Long Term Average (LTA_m)	Aquatic Life MDL	Aquatic Life AML	Human Health MDL	Human Health AML	Final WQBELs	
														MDL	AML
Total Dissolved Solids	mg/L	--	--	--	105	0.6	--	--	55.2[1]	172	86	--	--	**172**	**86**
Cadmium, Total Recoverable	µg/L	0.52	0.097	7.63	--	0.6	0.167	0.051	0.051	0.16	0.08	7.63	3.80	**0.16**	**0.08**
Chromium, Total Recoverable	µg/L	--	--	156	5.56	0.6	--	--	2.95[1]	9.2	4.6	156	78	**9.17**	**4.57**
Copper, Total Recoverable	µg/L	3.79	3.35	2,058	3.58	0.6	1.22	1.77	1.89[1]	5.9	2.9	2,058	1,026	**5.9**	**2.9**
Iron, Total Recoverable	µg/L	--	1555	--	129	0.6	--	820	68[1]	212	106	--	--	**212**	**106**
Lead, Total Recoverable	µg/L	14.00	0.54	23.2	--	0.6	4.50	0.29	0.29	0.89	0.44	23.2	11.6	**0.89**	**0.44**
Manganese, Total Recoverable	µg/L	--	--	--	67.5	0.6	--	--	35.6[1]	111	55	--	--	**111**	**55**
Mercury, Total Recoverable	µg/L	1.70	1.33	0.05	--	0.6	0.55	0.70	0.026[2]	--	--	0.050	0.050	**0.050**	**0.050**
Zinc, Total Recoverable	µg/L	37	47	3,157	27	0.6	11.9	24.8	14.7[1]	46	23	3,156	1,573	**46**	**23**
Total Ammonia	mg/L	32.6	10.6	--	2.32	0.6	10.5	5.5	1.22[1]	3.8	1.9	--	--	**3.8**	**1.9**
Nitrate + Nitrite	mg/L	--	--	15.7	8.6	0.6	--	--	4.53[1]	14.1	7.0	15.7	7.8	**14.1**	**7.0**
Total Inorganic Nitrogen	mg/L	--	--	--	1.47	0.6	--	--	0.77[1]	--	1.2	--	--	**--**	**1.2**
Total Nitrogen	mg/L	--	--	--	--	0.6	--	10	10[3]	--	15.5	--	--	**--**	**93.1[4]**

Footnotes:
1. Based on BHES Order.
2. Based on Human Health water quality standard.
3. Based on approved nutrient variance.
4. AML is in lbs/day and based on the facility's design flow.

Table 5.A.2. WQBELs for Outfall 003 Discharging to Libby Creek

Parameter	Units	Acute Wasteload Allocation (WLA_a)	Chronic Wasteload Allocation (WLA_c)	Human Health Wasteload Allocation (WLA_{hh})	BHES Wasteload Allocation (WLA_{hh})	CV	Acute Long Term Average (LTA_a)	Chronic Long Term Average (LTA_c)	Minimum Long Term Average (LTA_m)	Aquatic Life MDL	Aquatic Life AML	Human Health MDL	Human Health AML	Final WQBELs	
														MDL	AML
Total Dissolved Solids	mg/L	--	--	--	104	0.6	--	--	54.5[1]	170	85	--	--	**170**	**85**
Cadmium, Total Recoverable	µg/L	0.52	0.097	6.94	--	0.6	0.167	0.051	0.051	0.16	0.08	6.94	3.46	**0.16**	**0.08**
Chromium, Total Recoverable	µg/L	--	--	141	5.43	0.6	--	--	2.87[1]	8.9	4.4	141	71	**8.9**	**4.4**
Copper, Total Recoverable	µg/L	3.79	3.22	1,861	3.43	0.6	1.22	1.70	1.81[1]	5.6	2.8	1,861	927	**5.6**	**2.8**
Iron, Total Recoverable	µg/L	--	1410	--	122	0.6	--	744	64[1]	200	100	--	--	**200**	**100**
Lead, Total Recoverable	µg/L	14.00	0.54	21.0	--	0.6	4.50	0.29	0.29	0.89	0.44	21.0	10.5	**0.89**	**0.44**
Manganese, Total Recoverable	µg/L	--	--	--	63	0.6	--	--	33.2	103	52	--	--	**103**	**52**
Mercury, Total Recoverable	µg/L	1.70	1.22	0.05	--	0.6	0.55	.64	0.026[2]	--	--	0.050	0.050	**0.050**	**0.050**
Zinc, Total Recoverable	µg/L	37	44	2,855	27	0.6	11.9	23.4	14.3[1]	45	22	2,855	1,423	**45**	**22**
Total Ammonia	mg/L	32.6	9.5	--	2.1	0.6	10.5	5.0	1.11[1]	3.5	1.7	--	--	**3.5**	**1.7**
Nitrate + Nitrite	mg/L	--	--	14.2	7.8	0.6	--	--	4.11[1]	12.8	6.4	14.2	7.1	**12.8**	**6.4**
Total Inorganic Nitrogen	mg/L	--	--	--	1.35	0.6	--	--	0.71[1]	--	1.1	--	--	**--**	**1.1**
Total Nitrogen	mg/L	--	--	--	--	0.6	--	10	10[3]	--	15.5	--	--	**--**	**93.1[4]**

Footnotes:
1. Based on BHES Order.
2. Based on Human Health water quality standard.
3. Based on approved nutrient variance.
4. AML is in lbs/day and based on the facility's design flow.

APPENDIX 6 – TEMPERATURE

The permittee has provided data summarizing the upstream (LB200) and downstream (LB300) temperatures for Libby Creek as well as the temperature of the effluent at the distribution box (UF-1) in the tables below.

LB200 is located about 2,507 feet upstream of the Libby Adit Site; the temperature in Libby Creek at this monitoring location is not influenced by the discharges from the facility. LB300 is located about 2,536 feet downstream of the Libby Adit and Outfall 003 (a direct discharge to Libby Creek that is not yet constructed). LB300 is at the end of the mixing zone for Outfalls 001-003. The pre-discharge table represents temperature data collected from 1988-2006.

Pre-Discharge Temperatures (^{o}C)		
Statistics	**LB200**	**LB300**
Average	6.3	5.3
Minimum	0.5	1.0
Maximum	23	19.5
Number	65	137
Standard Deviation	5.3	4.1

UF-1 is representative of the temperature of the effluent discharged by the wastewater treatment plant as collected at the distribution box. The facility's wastewater treatment plant became operational in 2007, with intermittent discharges beginning during the latter part of that year. Currently, the wastewater treatment plant discharges treated effluent to the infiltration pond where it percolates into groundwater (Outfall 001). The post-discharge table represents temperature data collected from 2007-present.

Post Discharge Temperatures (^{o}C)			
Statistics	**LB200**	**LB300**	**UF-1**
Average	4.7	5.1	14.2
Minimum	0.1	0.5	12.0
Maximum	12.0	11.3	17.6
Number	112	135	112
Standard Deviation	3.1	2.9	1.3

The permittee also provided additional synoptic temperature data for Libby Creek at monitoring locations LB200 and LB300. Delta is the difference in temperature from LB200 to LB300. This data is summarized in the table below.

Libby Creek Synoptic Data				
Sampling Date	Monitoring Location		Temperature Difference	
	LB200 (°C)	LB300 (°C)	Delta (°C)	Delta (°F)
4/29/2015	3.9	4.2	0.3	0.5
3/29/2015	3.4	3.4	0.0	0.0
3/25/2015	2.3	2.8	0.5	0.9
2/24/2015	0.7	1.2	0.5	0.9
1/28/2015	3.6	3.8	0.2	0.4
12/11/2014	5.2	4.7	-0.5	-0.9
11/12/2014	1.7	2.1	0.4	0.7
10/29/2014	5.1	5.4	0.3	0.5
10/10/2014	6.4	7.2	0.8	1.4
9/24/2014	9	8.4	-0.6	-1.0
8/25/2014	8.7	10.2	1.5	2.7
7/28/2014	9	9.5	0.5	0.9
7/15/2014	7.7	8.2	0.5	0.9
6/25/2014	5.2	5.8	0.6	1.0
5/28/2014	4.8	4.1	-0.7	-1.3
5/4/2014	3.3	3.7	0.4	0.7
4/29/2014	3.5	3.8	0.3	0.5
3/26/2014	3.3	3.5	0.2	0.4
2/26/2014	0.4	0.5	0.1	0.2